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<110> Chishti, Athar
Oh, Steven
Liu, David
Goel, Vikas
Li, Xuerong

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<151> 2001-03-02

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Thr Ser His Pro Gly Thr His Glu Val Tyr Val Glu Leu Gln Glu Leu
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Val Met Asp Glu Lys Asn Gln Glu Leu Arg Trp Met Glu Ala Ala Arg
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Trp Val Gln Leu Glu Glu Asn Leu Gly Glu Asn Gly Ala Trp Gly Arg
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Pro His Leu Ser His Leu Thr Phe Trp Ser Leu Leu Glu Leu Arg Arg
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Val Phe Thr Lys Gly Thr Val Leu Leu Asp Leu Gln Glu Thr Ser Leu
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Ala Gly Val Ala Asn Gln Leu Leu Asp Arg Phe Ile Phe Glu Asp Gln
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Ile Arg Pro Gln Asp Arg Glu Glu Leu Leu Arg Ala Leu Leu Leu Lys
145 150 155 160

His Ser His Ala Gly Glu Leu Glu Ala Leu Gly Gly Val Lys Pro Ala
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Val Leu Thr Arg Ser Gly Asp Pro Ser Gln Pro Leu Leu Pro Gln His
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Ser Ser Leu Glu Thr Gln Leu Phe Cys Glu Gln Gly Asp Gly Gly Thr
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Ala Pro His Ile Asp Tyr Thr Gln Leu Gly Arg Ala Ala Ala Thr Leu
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Met Ser Glu Arg Val Phe Arg Ile Asp Ala Tyr Met Ala Gln Ser Arg
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Gly Glu Leu Leu His Ser Leu Glu Gly Phe Leu Asp Cys Ser Leu Val
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Pro Val Gln Arg Glu Leu Leu Arg Arg Arg Tyr Gln Ser Ser Pro Ala
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Asp Ile Arg Arg Arg Tyr Pro Tyr Tyr Leu Ser Asp Ile Thr Asp Ala
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Leu Ser Pro Ala Ile Thr Phe Gly Gly Leu Leu Gly Glu Lys Thr Arg
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Pro Lys Pro Gln Gly Pro Leu Pro Asn Thr Ala Leu Leu Ser Leu Val
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Leu Met Ala Gly Thr Phe Phe Phe Ala Met Met Leu Arg Lys Phe Lys
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Gln Asp Thr Tyr Thr Gln Lys Leu Ser Val Pro Asp Gly Phe Lys Val
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Ser Asn Ser Ser Ala Arg Gly Trp Val Ile His Pro Leu Gly Leu Arg
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Ser Glu Phe Pro Ile Trp Met Met Phe Ala Ser Ala Leu Pro Ala Leu
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Met His Leu Phe Thr Gly Ile Gln Ile Ile Cys Leu Ala Val Leu Trp
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Thr Ser His Pro Gly Thr His Lys Val Tyr Val Glu Leu Gln Glu Leu
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Val Phe Thr Lys Gly Thr Val Leu Leu Asp Leu Gln Glu Thr Ser Leu
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Pro Lys Pro Gln Gly Pro Leu Pro Asn Thr Ala Leu Leu Ser Leu Val
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Val Ser Lys Pro Glu Arg Lys Met Val Lys Gly Ser Gly Phe His Leu
690 695 700

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725 730 735

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755 760 765

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Lys Tyr His Pro Asp Val Pro Tyr Val Lys Arg Val Lys Thr Trp Arg
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Met His Leu Phe Thr Gly Ile Gln Ile Ile Cys Leu Ala Val Leu Trp
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Val Val Lys Ser Thr Pro Ala Ser Leu Ala Leu Pro Phe Val Leu Ile
850 855 860

Leu Thr Val Pro Leu Arg Arg Val Leu Leu Pro Leu Ile Phe Arg Asn
865 870 875 880

Val Glu Leu Gln Cys Leu Asp Ala Asp Asp Ala Lys Ala Thr Phe Asp
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Glu Glu Glu Gly Arg Asp Glu Tyr Asp Glu Val Ala Met Pro Val
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aagatcatat tctttttatg ttcatttctt ttttttatta taaatacaca atgtgtaaca 480

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gttacaacta gtacacctgg ttcaaagggt tcagttgctt caggtggttc aggtggctca 660

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gctaaatctt acgctgattt aaaacacaga gtacgaaatt acttgttaac tatcaaagaa 840

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gagaaactta cacaccataa tacttttgca tcctatgaaa attctaaaca taatcttgaa 2040

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<213> Plasmodium falciparum

<400> 10

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Thr Gln Cys Val Thr His Glu Ser Tyr Gln Glu Leu Val Lys Lys Leu
20 25 30

Glu Ala Leu Glu Asp Ala Val Leu Thr Gly Tyr Ser Leu Phe Gln Lys
35 40 45

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Glu Lys Met Val Leu Asn Glu Gly Thr Ser Gly Thr Ala Val Thr Thr
    50                  55                  60

Ser Thr Pro Gly Ser Lys Gly Ser Val Ala Ser Gly Gly Ser Gly Gly
65                  70                  75                  80

Ser Val Ala Ser Gly Gly Ser Val Ala Ser Gly Gly Ser Val Ala Ser
                85                  90                  95

Gly Gly Ser Val Ala Ser Gly Gly Ser Gly Asn Ser Arg Arg Thr Asn
            100                 105                 110

Pro Ser Asp Asn Ser Ser Asp Ser Asp Ala Lys Ser Tyr Ala Asp Leu
        115                 120                 125

Lys His Arg Val Arg Asn Tyr Leu Leu Thr Ile Lys Glu Leu Lys Tyr
    130                 135                 140

Pro Gln Leu Phe Asp Leu Thr Asn His Met Leu Thr Leu Cys Asp Asn
145                 150                 155                 160

Ile His Gly Phe Lys Tyr Leu Ile Asp Gly Tyr Glu Glu Ile Asn Glu
                165                 170                 175

Leu Leu Tyr Lys Leu Asn Phe Tyr Phe Asp Leu Leu Arg Ala Lys Leu
            180                 185                 190

Asn Asp Val Cys Ala Asn Asp Tyr Cys Gln Ile Pro Phe Asn Leu Lys
        195                 200                 205

Ile Arg Ala Asn Glu Leu Asp Val Leu Lys Lys Leu Val Phe Gly Tyr
    210                 215                 220

Arg Lys Pro Leu Asp Asn Ile Lys Asp Asn Val Gly Lys Met Glu Asp
225                 230                 235                 240

Tyr Ile Lys Lys Asn Lys Lys Thr Ile Glu Asn Ile Asn Glu Leu Ile
                245                 250                 255

Glu Glu Ser Lys Lys Thr Ile Asp Lys Asn Lys Asn Ala Thr Lys Glu
            260                 265                 270

Glu Glu Lys Lys Lys Leu Tyr Gln Ala Gln Tyr Asp Leu Ser Ile Tyr
        275                 280                 285

Asn Lys Gln Leu Glu Glu Ala His Asn Leu Ile Ser Val Leu Glu Lys
    290                 295                 300

Arg Ile Asp Thr Leu Lys Lys Asn Glu Asn Ile Lys Glu Leu Leu Asp
305                 310                 315                 320

Lys Ile Asn Glu Ile Lys Asn Pro Pro Pro Ala Asn Ser Gly Asn Thr
                325                 330                 335

Pro Asn Thr Leu Leu Asp Lys Asn Lys Lys Ile Glu Glu His Glu Lys
            340                 345                 350

Glu Ile Lys Glu Ile Ala Lys Thr Ile Lys Phe Asn Ile Asp Ser Leu
        355                 360                 365
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Phe Thr Asp Pro Leu Glu Leu Glu Tyr Tyr Leu Arg Glu Lys Asn Lys
370 375 380

Asn Ile Asp Ile Ser Ala Lys Val Glu Thr Lys Glu Ser Thr Glu Pro
385 390 395 400

Asn Glu Tyr Pro Asn Gly Val Thr Tyr Pro Leu Ser Tyr Asn Asp Ile
405 410 415

Asn Asn Ala Leu Asn Glu Leu Asn Ser Phe Gly Asp Leu Ile Asn Pro
420 425 430

Phe Asp Tyr Thr Lys Glu Pro Ser Lys Asn Ile Tyr Thr Asp Asn Glu
435 440 445

Arg Lys Lys Phe Ile Asn Glu Ile Lys Glu Lys Ile Lys Ile Glu Lys
450 455 460

Lys Lys Ile Glu Ser Asp Lys Lys Ser Tyr Glu Asp Arg Ser Lys Ser
465 470 475 480

Leu Asn Asp Ile Thr Lys Glu Tyr Glu Lys Leu Leu Asn Glu Ile Tyr
485 490 495

Asp Ser Lys Phe Asn Asn Asn Ile Asp Leu Thr Asn Phe Glu Lys Met
500 505 510

Met Gly Lys Arg Tyr Ser Tyr Lys Val Glu Lys Leu Thr His His Asn
515 520 525

Thr Phe Ala Ser Tyr Glu Asn Ser Lys His Asn Leu Glu Lys Leu Thr
530 535 540

Lys Ala Leu Lys Tyr Met Glu Asp Tyr Ser Leu Arg Asn Ile Val Val
545 550 555 560

Glu Lys Glu Leu Lys Tyr Tyr Lys Asn Leu Ile Ser Lys Ile Glu Asn
565 570 575

Glu Ile Glu Thr Leu Val Glu Asn Ile Lys Lys Asp Glu Glu Gln Leu
580 585 590

Phe Glu Lys Lys Ile Thr Lys Asp Glu Asn Lys Pro Asp Glu Lys Ile
595 600 605

Leu Glu Val Ser Asp Ile Val Lys Val Gln Val Gln Lys Val Leu Leu
610 615 620

Met Asn Lys Ile Asp Glu Leu Lys Lys Thr Gln Leu Ile Leu Lys Asn
625 630 635 640

Val Glu Leu Lys His Asn Ile His Val Pro Asn Ser Tyr Lys Gln Glu
645 650 655

Asn Lys Gln Glu Pro Tyr Tyr Leu Ile Val Leu Lys Lys Glu Ile Asp
660 665 670

Lys Leu Lys Val Phe Met Pro Lys Val Glu Ser Leu Ile Asn Glu Glu
675 680 685

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Lys Lys Asn Ile Lys Thr Glu Gly Gln Ser Asp Asn Ser Glu Pro Ser
    690                 695                 700

Thr Glu Gly Glu Ile Thr Gly Gln Ala Thr Thr Lys Pro Gly Gln Gln
705                 710                 715                 720

Ala Gly Ser Ala Leu Glu Gly Asp Ser Val Gln Ala Gln Ala Gln Glu
                725                 730                 735

Gln Lys Gln Ala Gln Pro Pro Val Pro Val Pro Val Pro Glu Ala Lys
            740                 745                 750

Ala Gln Val Pro Thr Pro Pro Ala Pro Val Asn Asn Lys Thr Glu Asn
        755                 760                 765

Val Ser Lys Leu Asp Tyr Leu Glu Lys Leu Tyr Glu Phe Leu Asn Thr
    770                 775                 780

Ser Tyr Ile Cys His Lys Tyr Ile Leu Val Ser His Ser Thr Met Asn
785                 790                 795                 800

Glu Lys Ile Leu Lys Gln Tyr Lys Ile Thr Lys Glu Glu Glu Ser Lys
                805                 810                 815

Leu Ser Ser Cys Asp Pro Leu Asp Leu Leu Phe Asn Ile Gln Asn Asn
            820                 825                 830

Ile Pro Val Met Tyr Ser Met Phe Asp Ser Leu Asn Asn Ser Leu Ser
        835                 840                 845

Gln Leu Phe Met Glu Ile Tyr Glu Lys Glu Met Val Cys Asn Leu Tyr
    850                 855                 860

Lys Leu Lys Asp Asn Asp Lys Ile Lys Asn Leu Leu Glu Glu Ala Lys
865                 870                 875                 880

Lys Val Ser Thr Ser Val Lys Thr Leu Ser Ser Ser Ser Met Gln Pro
                885                 890                 895

Leu Ser Leu Thr Pro Gln Asp Lys Pro Glu Val Ser Ala Asn Asp Asp
            900                 905                 910

Thr Ser His Ser Thr Asn Leu Asn Asn Ser Leu Lys Leu Phe Glu Asn
        915                 920                 925

Ile Leu Ser Leu Gly Lys Asn Lys Asn Ile Tyr Gln Glu Leu Ile Gly
    930                 935                 940

Gln Lys Ser Ser Glu Asn Phe Tyr Glu Lys Ile Leu Lys Asp Ser Asp
945                 950                 955                 960

Thr Phe Tyr Asn Glu Ser Phe Thr Asn Phe Val Lys Ser Lys Ala Asp
                965                 970                 975

Asp Ile Asn Ser Leu Asn Asp Glu Ser Lys Arg Lys Lys Leu Glu Glu
            980                 985                 990

Asp Ile Asn Lys Leu Lys Lys Thr  Leu Gln Leu Ser Phe  Asp Leu Tyr
        995                 1000                1005
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Asn Lys  Tyr Lys Leu Lys Leu  Glu Arg Leu Phe Asp  Lys Lys Lys
    1010                 1015                 1020

Thr Val  Gly Lys Tyr Lys Met  Gln Ile Lys Lys Leu  Thr Leu Leu
    1025                 1030                 1035

Lys Glu  Gln Leu Glu Ser Lys  Leu Asn Ser Leu Asn  Asn Pro Lys
    1040                 1045                 1050

His Val  Leu Gln Asn Phe Ser  Val Phe Phe Asn Lys  Lys Lys Glu
    1055                 1060                 1065

Ala Glu  Ile Ala Glu Thr Glu  Asn Thr Leu Glu Asn  Thr Lys Ile
    1070                 1075                 1080

Leu Leu  Lys His Tyr Lys Gly  Leu Val Lys Tyr Tyr  Asn Gly Glu
    1085                 1090                 1095

Ser Ser  Pro Leu Lys Thr Leu  Ser Glu Glu Ser Ile  Gln Thr Glu
    1100                 1105                 1110

Asp Asn  Tyr Ala Ser Leu Glu  Asn Phe Lys Val Leu  Ser Lys Leu
    1115                 1120                 1125

Glu Gly  Lys Leu Lys Asp Asn  Leu Asn Leu Glu Lys  Lys Lys Leu
    1130                 1135                 1140

Ser Tyr  Leu Ser Ser Gly Leu  His His Leu Ile Ala  Glu Leu Lys
    1145                 1150                 1155

Glu Val  Ile Lys Asn Lys Asn  Tyr Thr Gly Asn Ser  Pro Ser Glu
    1160                 1165                 1170

Asn Asn  Thr Asp Val Asn Asn  Ala Leu Glu Ser Tyr  Lys Lys Phe
    1175                 1180                 1185

Leu Pro  Glu Gly Thr Asp Val  Ala Thr Val Val Ser  Glu Ser Gly
    1190                 1195                 1200

Ser Asp  Thr Leu Glu Gln Ser  Gln Pro Lys Lys Pro  Ala Ser Thr
    1205                 1210                 1215

His Val  Gly Ala Glu Ser Asn  Thr Ile Thr Thr Ser  Gln Asn Val
    1220                 1225                 1230

Asp Asp  Glu Val Asp Asp Val  Ile Ile Val Pro Ile  Phe Gly Glu
    1235                 1240                 1245

Ser Glu  Glu Asp Tyr Asp Asp  Leu Gly Gln Val Val  Thr Gly Glu
    1250                 1255                 1260

Ala Val  Thr Pro Ser Val Ile  Asp Asn Ile Leu Ser  Lys Ile Glu
    1265                 1270                 1275

Asn Glu  Tyr Glu Val Leu Tyr  Leu Lys Pro Leu Ala  Gly Val Tyr
    1280                 1285                 1290

Arg Ser  Leu Lys Lys Gln Leu  Glu Asn Asn Val Met  Thr Phe Asn
    1295                 1300                 1305
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Val Asn Val Lys Asp Ile Leu Asn Ser Arg Phe Asn Lys Arg Glu
1310 1315 1320

Asn Phe Lys Asn Val Leu Glu Ser Asp Leu Ile Pro Tyr Lys Asp
1325 1330 1335

Leu Thr Ser Ser Asn Tyr Val Val Lys Asp Pro Tyr Lys Phe Leu
1340 1345 1350

Asn Lys Glu Lys Arg Asp Lys Phe Leu Ser Ser Tyr Asn Tyr Ile
1355 1360 1365

Lys Asp Ser Ile Asp Thr Asp Ile Asn Phe Ala Asn Asp Val Leu
1370 1375 1380

Gly Tyr Tyr Lys Ile Leu Ser Glu Lys Tyr Lys Ser Asp Leu Asp
1385 1390 1395

Ser Ile Lys Lys Tyr Ile Asn Asp Lys Gln Gly Glu Asn Glu Lys
1400 1405 1410

Tyr Leu Pro Phe Leu Asn Asn Ile Glu Thr Leu Tyr Lys Thr Val
1415 1420 1425

Asn Asp Lys Ile Asp Leu Phe Val Ile His Leu Glu Ala Lys Val
1430 1435 1440

Leu Asn Tyr Thr Tyr Glu Lys Ser Asn Val Glu Val Lys Ile Lys
1445 1450 1455

Glu Leu Asn Tyr Leu Lys Thr Ile Gln Asp Lys Leu Ala Asp Phe
1460 1465 1470

Lys Lys Asn Asn Asn Phe Val Gly Ile Ala Asp Leu Ser Thr Asp
1475 1480 1485

Tyr Asn His Asn Asn Leu Leu Thr Lys Phe Leu Ser Thr Gly Met
1490 1495 1500

Val Phe Glu Asn Leu Ala Lys Thr Val Leu Ser Asn Leu Leu Asp
1505 1510 1515

Gly Asn Leu Gln Gly Met Leu Asn Ile Ser Gln His Gln Cys Val
1520 1525 1530

Lys Lys Gln Cys Pro Gln Asn Ser Gly Cys Phe Arg His Leu Asp
1535 1540 1545

Glu Arg Glu Glu Cys Lys Cys Leu Leu Asn Tyr Lys Gln Glu Gly
1550 1555 1560

Asp Lys Cys Val Glu Asn Pro Asn Pro Thr Cys Asn Glu Asn Asn
1565 1570 1575

Gly Gly Cys Asp Ala Asp Ala Lys Cys Thr Glu Glu Asp Ser Gly
1580 1585 1590

Ser Asn Gly Lys Lys Ile Thr Cys Glu Cys Thr Lys Pro Asp Ser
1595 1600 1605

Tyr Pro Leu Phe Asp Gly Ile Phe Cys Ser Ser Ser Asn Phe Leu
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Gly Ile Ser Phe Leu Leu Ile Leu Met Leu Ile Leu Tyr Ser Phe
1625 1630 1635

Ile

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<213> Plasmodium falciparum

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Glu Asn Glu Tyr Glu Val Leu Tyr Leu Lys Pro Leu Ala Gly Val Tyr
20 25 30

Arg Ser Leu Lys Lys Gln Leu Glu Asn Asn Val Met Thr Phe Asn Val
35 40 45

Asn Val Lys Asp Ile Leu Asn Ser Arg Phe Asn Lys Arg Glu Asn Phe
50 55 60

Lys Asn Val Leu Glu Ser Asp Leu Ile Pro Tyr Lys Asp Leu Thr Ser
65 70 75 80

Ser Asn Tyr Val Val Lys Asp Pro Tyr Lys Phe Leu Asn Lys Glu Lys
85 90 95

Arg Asp Lys Phe Leu Ser Ser Tyr Asn Tyr Ile Lys Asp Ser Ile Asp
100 105 110

Thr Asp Ile Asn Phe Ala Asn Asp Val Leu Gly Tyr Tyr Lys Ile Leu
115 120 125

Ser Glu Lys Tyr Lys Ser Asp Leu Asp Ser Ile Lys Lys Tyr Ile Asn
130 135 140

Asp Lys Gln Gly Glu Asn Glu Lys Tyr Leu Pro Phe Leu Asn Asn Ile
145 150 155 160

Glu Thr Leu Tyr Lys Thr Val Asn Asp Lys Ile Asp Leu Phe Val Ile
165 170 175

His Leu Glu Ala Lys Val Leu Asn Tyr Thr Tyr Glu Lys Ser Asn Val
180 185 190

Glu Val Lys Ile Lys Glu Leu Asn Tyr Leu Lys Thr Ile Gln Asp Lys
195 200 205

Leu Ala Asp Phe Lys Lys Asn Asn Asn Phe Val Gly Ile Ala Asp Leu
210 215 220

Ser Thr Asp Tyr Asn His Asn Asn Leu Leu Thr Lys Phe Leu Ser Thr
225 230 235 240

Gly Met Val Phe Glu Asn Leu Ala Lys Thr Val Leu Ser Asn Leu Leu
245 250 255

Asp Gly Asn Leu Gln Gly Met Leu Asn Ile Ser Gln His Gln Cys Val
260 265 270

Lys Lys Gln Cys Pro Gln Asn Ser Gly Cys Phe Arg His Leu Asp Glu
275 280 285

Arg Glu Glu Cys Lys Cys Leu Leu Asn Tyr Lys Gln Glu Gly Asp Lys
290 295 300

Cys Val Glu Asn Pro Asn Pro Thr Cys Asn Glu Asn Asn Gly Gly Cys
305 310 315 320

Asp Ala Asp Ala Lys Cys Thr Glu Glu Asp Ser Gly Ser Asn Gly Lys
325 330 335

Lys Ile Thr Cys Glu Cys Thr Lys Pro Asp Ser Tyr Pro Leu Phe Asp
340 345 350

Gly Ile Phe Cys Ser Ser Ser Asn Phe Leu Gly Ile Ser Phe Leu Leu
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Ile Leu Met Leu Ile Leu Tyr Ser Phe Ile
370 375

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<213> Plasmodium falciparum

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Asn Leu Asn Asn Ser Leu Lys Leu Phe Glu Asn Ile Leu Ser Leu Gly
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Lys Asn Lys Asn Ile Tyr Gln Glu Leu Ile Gly Gln Lys Ser Ser Glu
35 40 45

Asn Phe Tyr Glu Lys Ile Leu Lys Asp Ser Asp Thr Phe Tyr Asn Glu
50 55 60

Ser Phe Thr Asn Phe Val Lys Ser Lys Ala Asp Asp Ile Asn Ser Leu
65 70 75 80

Asn Asp Glu Ser Lys Arg Lys Lys Leu Glu Glu Asp Ile Asn Lys Leu
85 90 95

Lys Lys Thr Leu Gln Leu Ser Phe Asp Leu Tyr Asn Lys Tyr Lys Leu
100 105 110

Lys Leu Glu Arg Leu Phe Asp Lys Lys Lys Thr Val Gly Lys Tyr Lys
115 120 125

Met Gln Ile Lys Lys Leu Thr Leu Leu Lys Glu Gln Leu Glu Ser Lys

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    130                 135                 140

Leu Asn Ser Leu Asn Asn Pro Lys His Val Leu Gln Asn Phe Ser Val
145                 150                 155                 160

Phe Phe Asn Lys Lys Lys Glu Ala Glu Ile Ala Glu Thr Glu Asn Thr
                165                 170                 175

Leu Glu Asn Thr Lys Ile Leu Leu Lys His Tyr Lys Gly Leu Val Lys
            180                 185                 190

Tyr Tyr Asn Gly Glu Ser Ser Pro Leu Lys Thr Leu Ser Glu Glu Ser
        195                 200                 205

Ile Gln Thr Glu Asp Asn Tyr Ala Ser Leu Glu Asn Phe Lys Val Leu
    210                 215                 220

Ser Lys Leu Glu Gly Lys Leu Lys Asp Asn Leu Asn Leu Glu Lys Lys
225                 230                 235                 240

Lys Leu Ser Tyr Leu Ser Ser Gly Leu His His Leu Ile Ala Glu Leu
                245                 250                 255

Lys Glu Val Ile Lys Asn Lys Asn Tyr Thr Gly Asn Ser Pro Ser Glu
            260                 265                 270

Asn Asn Thr Asp Val Asn Asn Ala Leu Glu Ser Tyr Lys Lys Phe Leu
        275                 280                 285

Pro Glu Gly Thr Asp Val Ala Thr Val Val Ser Glu Ser Gly Ser Asp
    290                 295                 300

Thr Leu Glu Gln Ser Gln Pro Lys Lys Pro Ala Ser Thr His Val Gly
305                 310                 315                 320

Ala Glu Ser Asn Thr Ile Thr Thr Ser Gln Asn Val Asp Asp Glu Val
                325                 330                 335

Asp Asp Val Ile Ile Val Pro Ile Phe Gly Glu Ser Glu Glu Asp Tyr
            340                 345                 350

Asp Asp Leu Gly Gln Val Val Thr
        355                 360

<210>  13
<211>  220
<212>  PRT
<213>  Plasmodium falciparum

<400>  13

Gln Asp Lys Pro Glu Val Ser Ala Asn Asp Asp Thr Ser His Ser Thr
1               5                   10                  15

Asn Leu Asn Asn Ser Leu Lys Leu Phe Glu Asn Ile Leu Ser Leu Gly
            20                  25                  30

Lys Asn Lys Asn Ile Tyr Gln Glu Leu Ile Gly Gln Lys Ser Ser Glu
        35                  40                  45
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Asn Phe Tyr Glu Lys Ile Leu Lys Asp Ser Asp Thr Phe Tyr Asn Glu
50 55 60

Ser Phe Thr Asn Phe Val Lys Ser Lys Ala Asp Asp Ile Asn Ser Leu
65 70 75 80

Asn Asp Glu Ser Lys Arg Lys Lys Leu Glu Glu Asp Ile Asn Lys Leu
85 90 95

Lys Lys Thr Leu Gln Leu Ser Phe Asp Leu Tyr Asn Lys Tyr Lys Leu
100 105 110

Lys Leu Glu Arg Leu Phe Asp Lys Lys Lys Thr Val Gly Lys Tyr Lys
115 120 125

Met Gln Ile Lys Lys Leu Thr Leu Leu Lys Glu Gln Leu Glu Ser Lys
130 135 140

Leu Asn Ser Leu Asn Asn Pro Lys His Val Leu Gln Asn Phe Ser Val
145 150 155 160

Phe Phe Asn Lys Lys Lys Glu Ala Glu Ile Ala Glu Thr Glu Asn Thr
165 170 175

Leu Glu Asn Thr Lys Ile Leu Leu Lys His Tyr Lys Gly Leu Val Lys
180 185 190

Tyr Tyr Asn Gly Glu Ser Ser Pro Leu Lys Thr Leu Ser Glu Glu Ser
195 200 205

Ile Gln Thr Glu Asp Asn Tyr Ala Ser Leu Glu Asn
210 215 220

<210> 14
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 14
ctcgagctca ggataaaccc 20

<210> 15
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 15
gcggccgcac ttgttagt 18

<210> 16
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 16
ctcgagctgg agaagcagta act 23

<210> 17
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 17
gcggccgcac taaatgaaac tgtata 26

<210> 18
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 18
ccgggatcca acatttcaca acaccaa 27

<210> 19
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 19
ccggaattca atgaaactgt ataata 26

<210> 20
<211> 31
<212> DNA

<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 20
ccgggatccg ggatgccctg gctcagtgcc a 31

<210> 21
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 21
ccggaattct tagatccgct gctctttgac ctc 33

<210> 22
<211> 42
<212> PRT
<213> Homo sapien

<400> 22

Gly Met Pro Trp Leu Ser Ala Thr Thr Val Arg Ser Val Thr His Ala
1 5 10 15

Asn Ala Leu Thr Val Met Gly Lys Ala Ser Thr Pro Gly Ala Ala Ala
20 25 30

Gln Ile Gln Glu Val Lys Glu Gln Arg Ile
35 40

<210> 23
<211> 51
<212> PRT
<213> Homo sapien

<400> 23

Asp Arg Ile Leu Leu Leu Phe Lys Pro Pro Lys Tyr His Pro Asp Val
1 5 10 15

Pro Tyr Val Lys Arg Val Lys Thr Trp Arg Met His Leu Phe Thr Gly
20 25 30

Ile Gln Ile Ile Cys Leu Ala Val Leu Trp Val Val Lys Ser Thr Pro
35 40 45

Ala Ser Leu
50

<210> 24
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 24
ccgggatcct ccgtcaccca tgccaacgcc 30

<210> 25
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 25
ccgggatccg accgcatctt gcttctgttc a 31

<210> 26
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 26
ccggaattct tagatctgga tgcccgtgaa 30

<210> 27
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 27
ggccatatgg atgatacatc acatt 25

<210> 28
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 28
ggcctcgagg ttttctaaac tggcat 26

<210> 29
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 29
ggccatatgt ttaaagtatt aagta 25

<210> 30
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 30
ggcctcgagt tctcctgtta ctacttg 27

<210> 31
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 31
gccgaattcg cagtaactcc ttccg 25

<210> 32
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 32
gccggatcca atgaaactgt ataata 26

<210> 33
<211> 334
<212> PRT
<213> Plasmodium falciparum

<400> 33

Gln Asp Lys Pro Glu Val Ser Ala Asn Asp Asp Thr Ser His Ser Thr
1 5 10 15

Asn Leu Asn Asn Ser Leu Lys Leu Phe Glu Asn Ile Leu Ser Leu Gly
20 25 30

Lys Asn Lys Asn Ile Tyr Gln Glu Leu Ile Gly Gln Lys Ser Ser Glu
35 40 45

Asn Phe Tyr Glu Lys Ile Leu Lys Asp Ser Asp Thr Phe Tyr Asn Glu
50 55 60

Ser Phe Thr Asn Phe Val Lys Ser Lys Ala Asp Asp Ile Asn Ser Leu
65 70 75 80

Asn Asp Glu Ser Lys Arg Lys Lys Leu Glu Glu Asp Ile Asn Lys Leu
85 90 95

Lys Lys Thr Leu Gln Leu Ser Phe Asp Leu Tyr Asn Lys Tyr Lys Leu
100 105 110

Lys Leu Glu Arg Leu Phe Asp Lys Lys Lys Thr Val Gly Lys Tyr Lys
115 120 125

Met Gln Ile Lys Lys Leu Thr Leu Leu Lys Glu Gln Leu Glu Ser Lys
130 135 140

Leu Asn Ser Leu Asn Asn Pro Lys His Val Leu Gln Asn Phe Ser Val
145 150 155 160

Phe Phe Asn Lys Lys Lys Glu Ala Glu Ile Ala Glu Thr Glu Asn Thr
165 170 175

Leu Glu Asn Thr Lys Ile Leu Leu Lys His Tyr Lys Gly Leu Val Lys
180 185 190

Tyr Tyr Asn Gly Glu Ser Ser Pro Leu Lys Thr Leu Ser Glu Glu Ser
195 200 205

Ile Gln Thr Glu Asp Asn Tyr Ala Ser Leu Glu Asn Phe Lys Val Leu
210 215 220

Ser Lys Leu Glu Gly Lys Leu Lys Asp Asn Leu Asn Leu Glu Lys Lys
225 230 235 240

Lys Leu Ser Tyr Leu Ser Ser Gly Leu His His Leu Ile Ala Glu Leu
245 250 255

Lys Glu Val Ile Lys Asn Lys Asn Tyr Thr Gly Asn Ser Pro Ser Glu
260 265 270

Asn Asn Thr Asp Val Asn Asn Ala Leu Glu Ser Tyr Lys Lys Phe Leu
275 280 285

Pro Glu Gly Thr Asp Val Ala Thr Val Val Ser Glu Ser Gly Ser Asp
290 295 300

Thr Leu Glu Gln Ser Gln Pro Lys Lys Pro Ala Ser Thr His Val Gly
305 310 315 320

Ala Glu Ser Asn Thr Ile Thr Thr Ser Gln Asn Val Asp Asp
325 330

<210> 34
<211> 376
<212> PRT
<213> Plasmodium falciparum

<400> 34

Ala Val Thr Pro Ser Val Ile Asp Asn Ile Leu Ser Lys Ile Glu Asn
1 5 10 15

Glu Tyr Glu Val Leu Tyr Leu Lys Pro Leu Ala Gly Val Tyr Arg Ser
20 25 30

Leu Lys Lys Gln Leu Glu Asn Asn Val Met Thr Phe Asn Val Asn Val
35 40 45

Lys Asp Ile Leu Asn Ser Arg Phe Asn Lys Arg Glu Asn Phe Lys Asn
50 55 60

Val Leu Glu Ser Asp Leu Ile Pro Tyr Lys Asp Leu Thr Ser Ser Asn
65 70 75 80

Tyr Val Val Lys Asp Pro Tyr Lys Phe Leu Asn Lys Glu Lys Arg Asp
85 90 95

Lys Phe Leu Ser Ser Tyr Asn Tyr Ile Lys Asp Ser Ile Asp Thr Asp
100 105 110

Ile Asn Phe Ala Asn Asp Val Leu Gly Tyr Tyr Lys Ile Leu Ser Glu
115 120 125

Lys Tyr Lys Ser Asp Leu Asp Ser Ile Lys Lys Tyr Ile Asn Asp Lys
130 135 140

Gln Gly Glu Asn Glu Lys Tyr Leu Pro Phe Leu Asn Asn Ile Glu Thr
145 150 155 160

Leu Tyr Lys Thr Val Asn Asp Lys Ile Asp Leu Phe Val Ile His Leu
165 170 175

Glu Ala Lys Val Leu Asn Tyr Thr Tyr Glu Lys Ser Asn Val Glu Val
180 185 190

Lys Ile Lys Glu Leu Asn Tyr Leu Lys Thr Ile Gln Asp Lys Leu Ala

195 200 205

Asp Phe Lys Lys Asn Asn Asn Phe Val Gly Ile Ala Asp Leu Ser Thr
210 215 220

Asp Tyr Asn His Asn Asn Leu Leu Thr Lys Phe Leu Ser Thr Gly Met
225 230 235 240

Val Phe Glu Asn Leu Ala Lys Thr Val Leu Ser Asn Leu Leu Asp Gly
245 250 255

Asn Leu Gln Gly Met Leu Asn Ile Ser Gln His Gln Cys Val Lys Lys
260 265 270

Gln Cys Pro Gln Asn Ser Gly Cys Phe Arg His Leu Asp Glu Arg Glu
275 280 285

Glu Cys Lys Cys Leu Leu Asn Tyr Lys Gln Glu Gly Asp Lys Cys Val
290 295 300

Glu Asn Pro Asn Pro Thr Cys Asn Glu Asn Asn Gly Gly Cys Asp Ala
305 310 315 320

Asp Ala Lys Cys Thr Glu Glu Asp Ser Gly Ser Asn Gly Lys Lys Ile
325 330 335

Thr Cys Glu Cys Thr Lys Pro Asp Ser Tyr Pro Leu Phe Asp Gly Ile
340 345 350

Phe Cys Ser Ser Ser Asn Phe Leu Gly Ile Ser Phe Leu Leu Ile Leu
355 360 365

Met Leu Ile Leu Tyr Ser Phe Ile
370 375

<210> 35
<211> 114
<212> PRT
<213> Plasmodium falciparum

<400> 35

Asn Ile Ser Gln His Gln Cys Val Lys Lys Gln Cys Pro Gln Asn Ser
1 5 10 15

Gly Cys Phe Arg His Leu Asp Glu Arg Glu Glu Cys Lys Cys Leu Leu
20 25 30

Asn Tyr Lys Gln Glu Gly Asp Lys Cys Val Glu Asn Pro Asn Pro Thr
35 40 45

Cys Asn Glu Asn Asn Gly Gly Cys Asp Ala Asp Ala Lys Cys Thr Glu
50 55 60

Glu Asp Ser Gly Ser Asn Gly Lys Lys Ile Thr Cys Glu Cys Thr Lys
65 70 75 80

Pro Asp Ser Tyr Pro Leu Phe Asp Gly Ile Phe Cys Ser Ser Ser Asn
85 90 95

Phe Leu Gly Ile Ser Phe Leu Leu Ile Leu Met Leu Ile Leu Tyr Ser
100 105 110

Phe Ile

<210> 36
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 36
ccggaattcg ggatgccctg gctcagtgcc a 31

<210> 37
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<223> Synthetic Oligonucleotide

<400> 37
ccgggatcct tagatccgct gctctttgac ctc 33

<210> 38
<211> 1287
<212> DNA
<213> Plasmodium falciparum

<400> 38
atgtgtaata aattgtcaag gggtagtaat atgaacaagt cagaattagg agataggagt 60

acaaaaatga aaggaaagat ttgctcaagt tacgtaaaat atatatgttt aacaatatgt 120

gttataggaa tgttatgtat aaaattaagg gataaatatg aaggatatgc tgcttcaggt 180

atacaaaaca ataatgtata tttaagaaat ttatcagagt tacaaaaggg aaatcaacct 240

tgcttgagac atacaaacag aacggataat tcaaagatga acaaagtcaa aaataataat 300

cagacagaaa ataatgacaa caaaaaaaag ctaggtaata aggaagataa ccagggaaaa 360

aataaaaata ataataataa agaaaaacaa aatgacatta ataaaagagg aacacaaaat 420

accgaaacta aaaaaagtaa taaaaaatta agtcaggact ataatgatgt aaataagaaa 480

tttacaaaag aacaaatgaa aaatttagtt aattcattag atgaaattcc accccgaaac 540

gatatggaaa agatatggaa tcatgccgtt aaaacagcta atagtggaac aagcagaatt 600

aaaaaaaaat taaaagaata tgaacaaaaa tatggaagat gctatgaaga gagaccaaat 660

cgttttggat catatgaaca ggtgttaata agccagccac atgaatttaa tgaaagatta 720

aaagttcatg aaaatgatta tactgttttt ttttatgaac tacttgataa agaccctaca 780

cttgatgaaa taaaaaatta tattacttca tttttagaag gttttcaaaa tttgatagac 840

tttcttttta ataaatataa aattatattt ttgcaaacaa ctacggaaat tcctatagac 900

ggaactattt atgataccag taagaaagat atgaagaaaa ataaaaacaa aaagcaaaat 960

ataaaacaag gaggtaaaaa ggaagaggta aaacaagaag gtaaaaagga agaggtaaaa 1020

caagaaggta aaaaggaaga ggtaaaacaa gaaggtaaaa aggaagaggt aaaacaagaa 1080

ggtaaaaagg aagaggtaaa acaaggaggt aaaaaggaag aggtaaaaca aggaggtaaa 1140

aaggaagagg taaaacaagg aggtaaaaag gaagaggtaa aacaaggagg taaaaaggag 1200

gaggtaaaac aaggaggtaa aaaggaggag gtaaaacaag gaggtaaaaa ggaagaggtg 1260

aaaaaagaat taaaaaaaaa caattaa 1287

<210> 39
<211> 3576
<212> DNA
<213> Plasmodium falciparum

<400> 39
atgatatttg ttaagagtaa gattttatat ttcctaaaat ggccttctgt tgccatagag 60

gaaaatttta gtggttcctt taaatgttta ttcaaaaaca agaggaataa atataatgtt 120

gaaatattaa agaatgatta taatacgcta acagaaagtc ataatataat taatagaagg 180

tctagaaatt taggagcgaa tccagaatcc attagtttag gttatgaatt aagtgaaaag 240

gatgaaggaa ataaaaatga tctaataaat agtgctacag atgtatcaac agaattagag 300

aatttaaaag aacgtttatt tcctgaacta gaattatata caaacgatca aaattcaaga 360

aataatactc caaatttacg taagggttct ttgggatttg atagttttaa aaaattggaa 420

ttaggaacac taaatcaatt tgataaagat aaaatgatta atctgaaaga tgaaaccaat 480

atgaatgaat ttgaaggatt tctaggaaga aattcaatgg ctagtaatgt agttacatcc 540

gaattatttg atgaaccagt agatgatagt agtagtacta ctactagcac aggtacaaaa 600

ttgcaaaacg ttccatcgaa tgataataac ggtgaacttt tgaaagatga acctatagat 660

gattatataa ataataattc gaaagttgaa tcggaagata attattatgc acaacagaat 720

atgcaaagtc agtcgaaaga taattatgct tcagaacaaa atgtagcaga tcaatcgaca 780

gataattatc ctacgcaaca tgatgtacca gttcaattga gagacaatta tgcttcagaa 840

caagagtatt ttgatagagg tgaacaattg aatgacgtaa gtgcagataa caatacaagt 900

aataaattga aagacgaacc tgtagataac aatacaagta ataaattgaa agacgaacct 960

gtagataaca atacaagtaa taaattgaaa gacgaacctg tagatgacaa tacaagtaat 1020

aaattgaaag acgaacctgt agataacaat acaattaata aattgaaaga cgaacctgta 1080

gatgacaata caagtaatat tttgaaagac gaacctgtag atgaccatgc aggtaaacat 1140

ttgaaagatg aacctgtaga tgaccatgca ggtaaacata tgaaagatga acccgttgat 1200

attgatagaa caaatattaa aaagggttta aatgaacaac atgttaatcc atggactaca 1260

acattagcag atttaaaaaa tattaataat agtatgaaaa tagaaaaaaa taataaaagt 1320

aatgaacagg taaaaaatac gagcgttagc aaatcatgtg atattataaa accttccaag 1380

tttaataaaa agaacctttt tgagcaaaga cttcaaagtg ttgaaggtaa aaacttttt 1440

gaaggaagaa gtcaaaattt agaaggaaga agtaattttg atgagagatc tcaaattgta 1500

gaacaaagga gaaactttga tgacagggac cagaacataa tggatagaaa aaattttgat 1560

gaaagaaatc aacaggttaa tgacagaaga aattttgatg aaagaaatca acaggttaat 1620

gacagaagaa attttgatga cagggatcag aacgtaatgg atagaagaaa ctttgatgaa 1680

agaaatcaac aggttaatga cagaagaaat tttgatgaaa gaaatcaaca ggttaatgac 1740

agaagaaatt ttgatgacag ggatcagaac gtaatggata gaagaaactt tgatgaaaga 1800

aatcaacagg ttaatgacag aagaaacttt gatgaaagaa atcaacaggt taatgacaga 1860

agaaactttg atgacaggga tcagaacgta atggatagaa gaaactttga tgaaagaaat 1920

caacaggtta atgacagaag aaattttgat gaaagaaatc aacaggttaa tgacagaaga 1980

aattttgatg aaagaaatca acatgttaat gacagaagaa attttgatga aagaaatcaa 2040

aatgttaatg atagaagaaa ttttgatgaa agaaatcaaa atgttaatga tagaagaaat 2100

tttgatgaaa gaaatcaaca agttaatgac agaagaaatt ttgatgaaag atatcaaaat 2160

gttaatgaga gaagaaattt tgatgagaga aatcaacaag ttaatgacag aagaaatttt 2220

gatgagagaa atcaacatgt taatgagaga tatcaaaatg ttaatgatag aagaaatttt 2280

gatgaaagaa atcaacaagt taatgacaga agaaattttg atgagagaaa tcaacatgtt 2340

aatgagagaa gaaattttga tgagagaaat caacatgtta atgagagata tcaaaatgtt 2400

aatgatagaa gaaattttga tgaaagaaat caacatgtta atgagagacg aaactttgat 2460

caaagggctc caaatgtaga agagcgaaga tatatggatc caagaaatcc gaatattcca 2520

tatgtaaggt ttccacatca tcagtggggt caaggaatga tgtatggaag accatattat 2580

ccttgggttc catttatggg agatggaaga ggttataatt tttataatcc tcatcaacat 2640

atggtatatg gaagacccta ttattgggta cctccacccc cagcgttaga atatacaaaa 2700

ggatttaatc caatggaaca gagaagagaa gaagacaggg gacatatggg aggaagaggt 2760

agtagatacc cagaagagga aagatataat tataacaata agagaagtaa tagtatacct 2820

gaaggacgaa attatgaaga gaatgcatat gagagaggag gagggaataa taaatgggat 2880

tttcgaaata tgtatgatag attaagagat gaagatgaaa atgattatga ccaacctcct 2940

agtacatctt cttctaatag aggaagaggt aatgaaagat atagtcaatc aagagataga 3000

agagaagaaa ggaataatta taatagtgat tattatacta gaggaaatga gagaacatat 3060

aataattcaa atgtaacaag tagttcaaat agagaattaa taccttacaa aaaagagata 3120

ttacctttg gtgttagtaa ttctgaattg gaagataaat taacagaaga ggaattaaat 3180

gaaagaataa gaagattaga ttatacagta tctgttaaag atatgtttat attatggaat 3240

catatacttg cacatgaaag aaaaaaatat acaaaaatgc aagaatattt aatgtattat 3300

agtcaatatt tagaaaaaac atatcttgtt cctacagctt ttagaaaaaa atactggtgg 3360

agggttcatt atatgttgac cgaagaagta gttaaaagag aaaggacaga taatttagat 3420

ttccatcaat tcttacgtaa aggttcttgt gaaaaacgtg aatttttata ttttattaat 3480

tctaaaagaa aaggatgggc tgatcttacg gaaacaatga aaaatatatg gatggaaaga 3540

ttaacttata aaatgagaaa atatagtgga gcataa 3576

<210> 40
<211> 903
<212> DNA
<213> Plasmodium falciparum

<400> 40
atgtgttcta caaataagaa tttagcttgc tgcaaaggag ataatgtttt cgatggacaa 60

ataaatggaa atgaatcata cccccaagta gtaaataaac aattaccacc taaggtatta 120

gaacccataa ttcaaaataa aatagttgaa atacccaaag aagtatatct tgaaaagatt 180

gtagaagttc ctcaaataaa aactgtagaa agaatagtgg aacagataag gcccgttatt 240

aagtacaaaa atgtgtataa acccaaaatt gtatatgttg aaaaagtaaa aaatgtagat 300

aaaattatat accaagagaa aattgttgaa gttccacaaa taaaaactgt tgaaaaaatt 360

gtagaagtcc cagtatatgt taacagagaa agaattatta ctgttccaag atatatggtt 420

gtagaaaaag taatacccgt attaaaaaca tccaaaagag aaagtataat ggaagttcca 480

gaagttaatt gcccacacat tgatataagt aaagaagtag aagataaaga agaaatacca 540

attaacgaat taaaagagaa ccaaaccata agtcttgctg atgaaaaaga aatccaaata 600

ttaaatgact taactagcca aaaggtagat tctaatgcaa ccattaatat ggaaggtgaa 660

caagatacaa ctgtagatac tattacacaa gaaaacttct gtggaacagt tagttgtaat 720

ttcttaccaa attatccaaa cttctccaaa attggaaacc cattatgcaa aggaggtcca 780

gaaaaagaaa aacgtttttc aagtatcagc atctacaaat caaaggattc aggattccca 840

agtataagaa ttgcaaaaac tccacaaatg ttccaaagaa atctttactg ttcatatgct 900

taa 903

<210> 41
<211> 1203
<212> DNA
<213> Plasmodium falciparum

<400> 41
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cttactataa tattgtctaa gtttgttgta atccctttga tggctcaaat gtttttgtac 120

acattcatta caatatatat tggaagtcat gatagtttga aacaattaga aattgatgat 180

aaaaccaaaa agtcagacaa cataacagcc tatgatgcta tgatgtttcc agtaattgga 240

tctgcagctt tgcttacttt atatttcgca tataagttct tagatccgtt ttatgtgaat 300

ttattattga ctctttacct aaccttggcg ggtgtatttt ccttacaggg tgtatttaca 360

acaatcttgg aacctgtttt tccaaatttt tttaaaaaag atgaatatgt caaaacattc 420

aaattaccaa attttatata taaagaacct attgtattca atactaataa aggagaaata 480

gtttgcttaa tactcagctt tgctatagga ttgcgttgga tattttataa agacttcatt 540

acacataacg ttttggcagt ttctttttgt tttcaagcca tatctttggt aattcttagc 600

aacttttttaa taggattctt attattatct ggtttgtttg tatatgatat tttctgggtt 660

tttggaaacg atgttatggt tacagtagct aagtcttttg aagctccagt aaaattgtta 720

ttcccagttt cgagtgatcc agtacattac agtatgcttg gtttaggaga tattattata 780

ccaggaatat tgatgtcttt atgtttacgt tttgattatt atttatttaa gaataacata 840

cataaaggaa acttaaagaa aatgtttaat gatatatcta tacatgaatc tttcaagaaa 900

tattattttt ataccattat aatattttac gaattaggtt tagttgttac atattgtatg 960

ctcttttatt ttgaacatcc tcaaccagct cttctttatt tggtacctgc atgtatactt 1020

gccatattag cttgttccat atgcaaaaga gaatttaaat taatgataaa atatcaagaa 1080

attacagaca aatccaatac tgtagatgat gcaagtaaga ataaaaaaaa agataaggaa 1140

gaaatcccca aaattcaaga gaccccagtg tcaaatgcaa aaaaaagaat taccaataaa 1200

tga 1203

<210> 42
<211> 3996
<212> DNA
<213> Plasmodium falciparum

<400> 42
atggtgttag tagtagagta tcataatata aatactcctg ttggaaaata ttcagagttg 60

gagaatttga aagaagaaaa ggaaaaaaga ttatataata atttggaata tgtaaattta 120

ttagacataa gaactttgga aaataaatct atatatgtat cttcagattt attgaatttt 180

ttaaaatgct attcaaattt gaatatcaac ttgaataagg ttccttatga tttggtctat 240

tcatttttgc ttgatggaga attatattta ggatatgata tatctgtttt tattttatta 300

gtaaaagcag aacattttga atattgtaga agaatagata atgaaaatag tgataagaaa 360

gaaagtttta gaacaaaaaa taaatcaaca attaaaagat catcacagat agatgatgaa 420

gataatttac aaggattgtt gattaaagaa aaagaagatt atttatcatt tttgaatgaa 480

aataatgagg ctttaaaaca atatatggaa tccgaaaaaa gaggaaatcc tttgtggcat 540

ttggatgaat ctaaatatat ggataaagat tggtatgatg aagaagattc atcatttata 600

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aatattcaaa ataatctccc aagtgttcac aatatgaaga atatgagtaa tatgaataat 960

ataaacaata ataataaaga tattattatt aatagaagtg gtatttctaa tggtaatagc 1020

caaagtgttc cttgctttga aaatattttg gattatgata aattaaaatt tgtggaatat 1080

ataaattcct ttagtgatgt aaagaaatca tcttcattcg atattattgg tagcagcaaa 1140

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aatttcaata atgtttcagg gttgttgagg gaagacaatt caaatatgaa tgaaatatac 1380

ctaacgaggg ataatcataa taataattat catgaaaatg aagaaaatat atatagtatt 1440

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cattttgaga aaacattgga atccataaat cctgatgacc ataatatttt taacagtgaa 1620

atggattcta tgaaaaatga aaataacgat gaagaagaac aaacagccac aagtatttat 1680

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gatagtacag ataataataa tggatataat agtaatagta gctataatag taataataat 1860

gaagatgata ataacaataa taataataat gatgagaatt gtgataataa taataaccat 1920

aataataata attataataa taataataat tatggtaaca ataataataa caacaataat 1980

aataaggaca ataataataa tgatggaaat ggtagtagta ataataataa taatgatgat 2040

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ataatagaag gagatatgat taattctgtt aaatatgata aaaacattgg tcatcatact 2280

acaaataaga gtgaaattag tactaactat tttgagaaca gttgtaacat gagtgtaaat 2340

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tttgaaaatt ataatacatt actagataaa cattttaaat ttattacatc tgtaaaaaac 3840

atttcacagt taagacgata tatatcactc tttcacaaat ttataattta tcatacactt 3900

cctcataata tttctttaag gaaacaatta tttattatcg aagctttaga atggtcttcg 3960

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<211> 876
<212> DNA
<213> Plasmodium falciparum

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gacaaaagga caggagcctt aggttatcta aatctaagtt atggaatggg tattatattc 180

ggtagtttct tagcaggtgt tatggtaaac tttgtaggat caagaggaaa tttattaatt 240

gcattattat cccaattaat agctttatgt ataagtacaa cgttagaaga agatccgaaa 300

ttattgaaga gctctaatgt ggataaaatg aaaatgtcag aaatactttt aagtattaaa 360

aatgaataca taagagtatt aaatttattt aaaaaaacat atggaatatg tttattaata 420

ctttttggat tattacctat attaatgaca aaatttgctt ttgctcctgt ggttgtagat 480

atgttcaaat taactccttc acacacatca tatctaatga cttatgcagg tataataact 540

attattgctg aagggatact tgctccttat ttaagttctt tactagggga tatgatttgt 600

tgtaaatatt cgataccact aacattaaca ggatttttat tattatcatt atgtggcgct 660

aacgaatcac ttgttcttat atttatgtct ataccattat gtggaggtgc tttattatat 720

atatgtggaa ctagccaaat gacaaaacga gtggaagaat cagaattggg ttcgattatt 780

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<211> 2712

<212> DNA
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<400> 44
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tttttagatt ttgtggatga acctgaacaa ttttactggt tcgtggaaca ttttttgtct 180

gtgaaatttc gagttccaaa gcatcttaaa gataaaaaca ttcataattt tacaccttgc 240

ttaaatagat catgggtatc tgaattttta aaagaatatg aagagccatt tgtaaatcct 300

gttatgaaat ttctagataa agagcaaaga ttatttttta catataactt tggagatgta 360

gaaccacaag gtaaatatac atatttccca gttaaggaat ttcacaaata ttgtatacta 420

ccccccttaa taaaaactaa tataaaagat ggtgaaagtg gagaattttt aaaatatcaa 480

ttaaataaag aagaatataa agtttttctt tcttcggttg gttcccaaat gacagctata 540

aaaaatttat attcaacagt tgaagatgaa caaagaaaac aattattaaa agttatcata 600

gaaaatgaaa gtacaaatga tatatctgtt caatgcccaa cttataacat aaaattacat 660

tatactaaag aatgtgctaa tagtaataat atattaaaat gtattgatga atttcttaga 720

aaaacatgtg aaaagaaaac cgaaagtaaa caccttctg cagacttatg tgaacactta 780

caatttcttt ttgaatcatt aaagaatcct tacttggata attttaaaaa atttatgact 840

aacagtgatt ttaccttaat caaacctcaa tcagtatgga atgtacctat attcgatata 900

tataaaccaa aaaattattt agatagtgtc caaaatttag atacagaatg ttttaagaaa 960

ttaaatagca aaaatttgat cttcttatca ttccatgatg atatacctaa caatccatat 1020

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acaatgtatt tggatttcga aagttccgat attttctcca gagaaaaagt tttcaccgcc 1980

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gaaatatcag aaatacctgt acaattagaa acatctaatg atggtattgg atacagaaaa 2100

caagacgttc tttatgaaac tgataaacca caaactatgg atgaagcttc atatgaagaa 2160

actgtagatg aagatgctca ccatgttaat gaaaaacaac acagtgccca cttcttagat 2220

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<211> 2232
<212> DNA
<213> Plasmodium falciparum

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gaaaatttat ttaaatttgt taaatgtgaa tattgtaatg aacatactta tgttaaaggt 180

aagaaagctc cttcagatcc tcaatgtgct gatataaaag aagaatgcaa agaattactt 240

aaggaaaaac aatacacaga ttcagttaca tatttaatgg atggttttaa atcagcaaat 300

aattcagcaa ataatggtaa aaaaaataac gctgaagaaa tgaaaaattt agtaaatttc 360

ttacaatctc ataagaaatt aattaaagca ttaaaaaaga atattgaaag tatacaaaat 420

aagaaacact taatttataa aaacaaatca tataatccat tattactttc ttgtgttaaa 480

aaaatgaata tgttaaaaga aaatgttgac tatattcaaa aaaatcaaaa cttatttaaa 540

gaattaatga atcaaaaagc tacctactct tttgttaata ccaaaaaaaa aattatttct 600

ttaaaatcac aaggtcataa aaaagaaacc tcacaaaatc aaaatgaaaa taacgacaat 660

caaaaatatc aagaagttaa tgatgaagat gatgtaaatg atgaagaaga tacaaacgat 720

gacgaagata ctaacgatga agaagataca aacgatgacg aagatacaaa tgatgacgaa 780

gatactaacg atgaagaaga tactaacgac gaagaagatc atgaaaataa taatgctaca 840

gcatacgaat taggtatcgt cccagttaac gatgtgttaa atgttaatat gaaaaatatg 900

ataacaggaa ataattttat ggatgttgtt aaaaatacat tagctcaatc aggtggatta 960

ggaagtaatg atttaataaa tttcttaaat caaggtaaag aaataggaga aaatttatta 1020

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ttaaatatgt taaaagataa tttaataaac tatgaattca tattagataa tttgaaaaca 1140

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gtaaaagtta aaaaaatagg tgtcacatta aaaaaatttg aaccacttaa aaatggaaat 1740

gttagtgaaa ccattaaatt gattcattta ggaaataaag ataaaaaaca cattgaagct 1800

ataaacaacg atattcaaat tattaaacaa gaattacaag ctatttataa tgaacttatg 1860

aattatacaa atggaaacaa aaatattcaa caaatatttc aacaaaatat tctagaaaat 1920

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gaagaagaac aagaagaaga agaagaagaa gaaatagtac cagaaaattt gacaactgaa 2220

gaatcaaaat aa 2232

<210> 46
<211> 428
<212> PRT
<213> Plasmodium falciparum

<400> 46

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Gly Asp Arg Ser Thr Lys Met Lys Gly Lys Ile Cys Ser Ser Tyr Val
            20                  25                  30

Lys Tyr Ile Cys Leu Thr Ile Cys Val Ile Gly Met Leu Cys Ile Lys
        35                  40                  45

Leu Arg Asp Lys Tyr Glu Gly Tyr Ala Ala Ser Gly Ile Gln Asn Asn
    50                  55                  60

Asn Val Tyr Leu Arg Asn Leu Ser Glu Leu Gln Lys Gly Asn Gln Pro
65                  70                  75                  80

Cys Leu Arg His Thr Asn Arg Thr Asp Asn Ser Lys Met Asn Lys Val
                85                  90                  95

Lys Asn Asn Asn Gln Thr Glu Asn Asn Asp Asn Lys Lys Lys Leu Gly
            100                 105                 110

Asn Lys Glu Asp Asn Gln Gly Lys Asn Lys Asn Asn Asn Asn Lys Glu
        115                 120                 125

Lys Gln Asn Asp Ile Asn Lys Arg Gly Thr Gln Asn Thr Glu Thr Lys
    130                 135                 140

Lys Ser Asn Lys Lys Leu Ser Gln Asp Tyr Asn Asp Val Asn Lys Lys
145                 150                 155                 160

Phe Thr Lys Glu Gln Met Lys Asn Leu Val Asn Ser Leu Asp Glu Ile
                165                 170                 175

Pro Pro Arg Asn Asp Met Glu Lys Ile Trp Asn His Ala Val Lys Thr
            180                 185                 190

Ala Asn Ser Gly Thr Ser Arg Ile Lys Lys Lys Leu Lys Glu Tyr Glu
        195                 200                 205

Gln Lys Tyr Gly Arg Cys Tyr Glu Glu Arg Pro Asn Arg Phe Gly Ser
    210                 215                 220

Tyr Glu Gln Val Leu Ile Ser Gln Pro His Glu Phe Asn Glu Arg Leu
225                 230                 235                 240

Lys Val His Glu Asn Asp Tyr Thr Val Phe Phe Tyr Glu Leu Leu Asp
                245                 250                 255

Lys Asp Pro Thr Leu Asp Glu Ile Lys Asn Tyr Ile Thr Ser Phe Leu
            260                 265                 270

Glu Gly Phe Gln Asn Leu Ile Asp Phe Leu Phe Asn Lys Tyr Lys Ile
        275                 280                 285
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Ile Phe Leu Gln Thr Thr Thr Glu Ile Pro Ile Asp Gly Thr Ile Tyr
290 295 300

Asp Thr Ser Lys Lys Asp Met Lys Lys Asn Lys Asn Lys Lys Gln Asn
305 310 315 320

Ile Lys Gln Gly Gly Lys Lys Glu Glu Val Lys Gln Glu Gly Lys Lys
325 330 335

Glu Glu Val Lys Gln Glu Gly Lys Lys Glu Glu Val Lys Gln Glu Gly
340 345 350

Lys Lys Glu Glu Val Lys Gln Glu Gly Lys Lys Glu Glu Val Lys Gln
355 360 365

Gly Gly Lys Lys Glu Glu Val Lys Gln Gly Gly Lys Lys Glu Glu Val
370 375 380

Lys Gln Gly Gly Lys Lys Glu Glu Val Lys Gln Gly Gly Lys Lys Glu
385 390 395 400

Glu Val Lys Gln Gly Gly Lys Lys Glu Glu Val Lys Gln Gly Gly Lys
405 410 415

Lys Glu Glu Val Lys Lys Glu Leu Lys Lys Asn Asn
420 425

<210> 47
<211> 1191
<212> PRT
<213> Plasmodium falciparum

<400> 47

Met Ile Phe Val Lys Ser Lys Ile Leu Tyr Phe Leu Lys Trp Pro Ser
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Val Ala Ile Glu Glu Asn Phe Ser Gly Ser Phe Lys Cys Leu Phe Lys
20 25 30

Asn Lys Arg Asn Lys Tyr Asn Val Glu Ile Leu Lys Asn Asp Tyr Asn
35 40 45

Thr Leu Thr Glu Ser His Asn Ile Ile Asn Arg Arg Ser Arg Asn Leu
50 55 60

Gly Ala Asn Pro Glu Ser Ile Ser Leu Gly Tyr Glu Leu Ser Glu Lys
65 70 75 80

Asp Glu Gly Asn Lys Asn Asp Leu Ile Asn Ser Ala Thr Asp Val Ser
85 90 95

Thr Glu Leu Glu Asn Leu Lys Glu Arg Leu Phe Pro Glu Leu Glu Leu
100 105 110

Tyr Thr Asn Asp Gln Asn Ser Arg Asn Asn Thr Pro Asn Leu Arg Lys
115 120 125

Gly Ser Leu Gly Phe Asp Ser Phe Lys Lys Leu Glu Leu Gly Thr Leu

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    130                 135                 140

Asn Gln Phe Asp Lys Asp Lys Met Ile Asn Leu Lys Asp Glu Thr Asn
145                 150                 155                 160

Met Asn Glu Phe Glu Gly Phe Leu Gly Arg Asn Ser Met Ala Ser Asn
                165                 170                 175

Val Val Thr Ser Glu Leu Phe Asp Glu Pro Val Asp Asp Ser Ser Ser
            180                 185                 190

Thr Thr Thr Ser Thr Gly Thr Lys Leu Gln Asn Val Pro Ser Asn Asp
        195                 200                 205

Asn Asn Gly Glu Leu Leu Lys Asp Glu Pro Ile Asp Asp Tyr Ile Asn
    210                 215                 220

Asn Asn Ser Lys Val Glu Ser Glu Asp Asn Tyr Tyr Ala Gln Gln Asn
225                 230                 235                 240

Met Gln Ser Gln Ser Lys Asp Asn Tyr Ala Ser Glu Gln Asn Val Ala
                245                 250                 255

Asp Gln Ser Thr Asp Asn Tyr Pro Thr Gln His Asp Val Pro Val Gln
            260                 265                 270

Leu Arg Asp Asn Tyr Ala Ser Glu Gln Glu Tyr Phe Asp Arg Gly Glu
        275                 280                 285

Gln Leu Asn Asp Val Ser Ala Asp Asn Asn Thr Ser Asn Lys Leu Lys
    290                 295                 300

Asp Glu Pro Val Asp Asn Asn Thr Ser Asn Lys Leu Lys Asp Glu Pro
305                 310                 315                 320

Val Asp Asn Asn Thr Ser Asn Lys Leu Lys Asp Glu Pro Val Asp Asp
                325                 330                 335

Asn Thr Ser Asn Lys Leu Lys Asp Glu Pro Val Asp Asn Asn Thr Ile
            340                 345                 350

Asn Lys Leu Lys Asp Glu Pro Val Asp Asp Asn Thr Ser Asn Ile Leu
        355                 360                 365

Lys Asp Glu Pro Val Asp Asp His Ala Gly Lys His Leu Lys Asp Glu
    370                 375                 380

Pro Val Asp Asp His Ala Gly Lys His Met Lys Asp Glu Pro Val Asp
385                 390                 395                 400

Ile Asp Arg Thr Asn Ile Lys Lys Gly Leu Asn Glu Gln His Val Asn
                405                 410                 415

Pro Trp Thr Thr Thr Leu Ala Asp Leu Lys Asn Ile Asn Asn Ser Met
            420                 425                 430

Lys Ile Glu Lys Asn Asn Lys Ser Asn Glu Gln Val Lys Asn Thr Ser
        435                 440                 445

Val Ser Lys Ser Cys Asp Ile Ile Lys Pro Ser Lys Phe Asn Lys Lys
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    450                 455                 460

Asn Leu Phe Glu Gln Arg Leu Gln Ser Val Glu Gly Lys Asn Phe Phe
465                 470                 475                 480

Glu Gly Arg Ser Gln Asn Leu Glu Gly Arg Ser Asn Phe Asp Glu Arg
                485                 490                 495

Ser Gln Ile Val Glu Gln Arg Arg Asn Phe Asp Asp Arg Asp Gln Asn
            500                 505                 510

Ile Met Asp Arg Lys Asn Phe Asp Glu Arg Asn Gln Gln Val Asn Asp
        515                 520                 525

Arg Arg Asn Phe Asp Glu Arg Asn Gln Gln Val Asn Asp Arg Arg Asn
    530                 535                 540

Phe Asp Asp Arg Asp Gln Asn Val Met Asp Arg Arg Asn Phe Asp Glu
545                 550                 555                 560

Arg Asn Gln Gln Val Asn Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln
                565                 570                 575

Gln Val Asn Asp Arg Arg Asn Phe Asp Asp Arg Asp Gln Asn Val Met
            580                 585                 590

Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln Gln Val Asn Asp Arg Arg
        595                 600                 605

Asn Phe Asp Glu Arg Asn Gln Gln Val Asn Asp Arg Arg Asn Phe Asp
    610                 615                 620

Asp Arg Asp Gln Asn Val Met Asp Arg Arg Asn Phe Asp Glu Arg Asn
625                 630                 635                 640

Gln Gln Val Asn Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln Gln Val
                645                 650                 655

Asn Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln His Val Asn Asp Arg
            660                 665                 670

Arg Asn Phe Asp Glu Arg Asn Gln Asn Val Asn Asp Arg Arg Asn Phe
        675                 680                 685

Asp Glu Arg Asn Gln Asn Val Asn Asp Arg Arg Asn Phe Asp Glu Arg
    690                 695                 700

Asn Gln Gln Val Asn Asp Arg Arg Asn Phe Asp Glu Arg Tyr Gln Asn
705                 710                 715                 720

Val Asn Glu Arg Arg Asn Phe Asp Glu Arg Asn Gln Gln Val Asn Asp
                725                 730                 735

Arg Arg Asn Phe Asp Glu Arg Asn Gln His Val Asn Glu Arg Tyr Gln
            740                 745                 750

Asn Val Asn Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln Gln Val Asn
        755                 760                 765

Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln His Val Asn Glu Arg Arg
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770 775 780

Asn Phe Asp Glu Arg Asn Gln His Val Asn Glu Arg Tyr Gln Asn Val
785 790 795 800

Asn Asp Arg Arg Asn Phe Asp Glu Arg Asn Gln His Val Asn Glu Arg
805 810 815

Arg Asn Phe Asp Gln Arg Ala Pro Asn Val Glu Glu Arg Arg Tyr Met
820 825 830

Asp Pro Arg Asn Pro Asn Ile Pro Tyr Val Arg Phe Pro His His Gln
835 840 845

Trp Gly Gln Gly Met Met Tyr Gly Arg Pro Tyr Tyr Pro Trp Val Pro
850 855 860

Phe Met Gly Asp Gly Arg Gly Tyr Asn Phe Tyr Asn Pro His Gln His
865 870 875 880

Met Val Tyr Gly Arg Pro Tyr Tyr Trp Val Pro Pro Pro Pro Ala Leu
885 890 895

Glu Tyr Thr Lys Gly Phe Asn Pro Met Glu Gln Arg Arg Glu Glu Asp
900 905 910

Arg Gly His Met Gly Gly Arg Gly Ser Arg Tyr Pro Glu Glu Glu Arg
915 920 925

Tyr Asn Tyr Asn Asn Lys Arg Ser Asn Ser Ile Pro Glu Gly Arg Asn
930 935 940

Tyr Glu Glu Asn Ala Tyr Glu Arg Gly Gly Gly Asn Asn Lys Trp Asp
945 950 955 960

Phe Arg Asn Met Tyr Asp Arg Leu Arg Asp Glu Asp Glu Asn Asp Tyr
965 970 975

Asp Gln Pro Pro Ser Thr Ser Ser Ser Asn Arg Gly Arg Gly Asn Glu
980 985 990

Arg Tyr Ser Gln Ser Arg Asp Arg Arg Glu Glu Arg Asn Asn Tyr Asn
995 1000 1005

Ser Asp Tyr Tyr Thr Arg Gly Asn Glu Arg Thr Tyr Asn Asn Ser
1010 1015 1020

Asn Val Thr Ser Ser Ser Asn Arg Glu Leu Ile Pro Tyr Lys Lys
1025 1030 1035

Glu Ile Leu Pro Phe Gly Val Ser Asn Ser Glu Leu Glu Asp Lys
1040 1045 1050

Leu Thr Glu Glu Glu Leu Asn Glu Arg Ile Arg Arg Leu Asp Tyr
1055 1060 1065

Thr Val Ser Val Lys Asp Met Phe Ile Leu Trp Asn His Ile Leu
1070 1075 1080

Ala His Glu Arg Lys Lys Tyr Thr Lys Met Gln Glu Tyr Leu Met

1085 1090 1095

Tyr Tyr Ser Gln Tyr Leu Glu Lys Thr Tyr Leu Val Pro Thr Ala
1100 1105 1110

Phe Arg Lys Lys Tyr Trp Trp Arg Val His Tyr Met Leu Thr Glu
1115 1120 1125

Glu Val Val Lys Arg Glu Arg Thr Asp Asn Leu Asp Phe His Gln
1130 1135 1140

Phe Leu Arg Lys Gly Ser Cys Glu Lys Arg Glu Phe Leu Tyr Phe
1145 1150 1155

Ile Asn Ser Lys Arg Lys Gly Trp Ala Asp Leu Thr Glu Thr Met
1160 1165 1170

Lys Asn Ile Trp Met Glu Arg Leu Thr Tyr Lys Met Arg Lys Tyr
1175 1180 1185

Ser Gly Ala
1190

<210> 48
<211> 300
<212> PRT
<213> Plasmodium falciparum

<400> 48

Met Cys Ser Thr Asn Lys Asn Leu Ala Cys Cys Lys Gly Asp Asn Val
1 5 10 15

Phe Asp Gly Gln Ile Asn Gly Asn Glu Ser Tyr Pro Gln Val Val Asn
20 25 30

Lys Gln Leu Pro Pro Lys Val Leu Glu Pro Ile Ile Gln Asn Lys Ile
35 40 45

Val Glu Ile Pro Lys Glu Val Tyr Leu Glu Lys Ile Val Glu Val Pro
50 55 60

Gln Ile Lys Thr Val Glu Arg Ile Val Glu Gln Ile Arg Pro Val Ile
65 70 75 80

Lys Tyr Lys Asn Val Tyr Lys Pro Lys Ile Val Tyr Val Glu Lys Val
85 90 95

Lys Asn Val Asp Lys Ile Ile Tyr Gln Glu Lys Ile Val Glu Val Pro
100 105 110

Gln Ile Lys Thr Val Glu Lys Ile Val Glu Val Pro Val Tyr Val Asn
115 120 125

Arg Glu Arg Ile Ile Thr Val Pro Arg Tyr Met Val Val Glu Lys Val
130 135 140

Ile Pro Val Leu Lys Thr Ser Lys Arg Glu Ser Ile Met Glu Val Pro
145 150 155 160

Glu Val Asn Cys Pro His Ile Asp Ile Ser Lys Glu Val Glu Asp Lys
165 170 175

Glu Glu Ile Pro Ile Asn Glu Leu Lys Glu Asn Gln Thr Ile Ser Leu
180 185 190

Ala Asp Glu Lys Glu Ile Gln Ile Leu Asn Asp Leu Thr Ser Gln Lys
195 200 205

Val Asp Ser Asn Ala Thr Ile Asn Met Glu Gly Glu Gln Asp Thr Thr
210 215 220

Val Asp Thr Ile Thr Gln Glu Asn Phe Cys Gly Thr Val Ser Cys Asn
225 230 235 240

Phe Leu Pro Asn Tyr Pro Asn Phe Ser Lys Ile Gly Asn Pro Leu Cys
245 250 255

Lys Gly Gly Pro Glu Lys Glu Lys Arg Phe Ser Ser Ile Ser Ile Tyr
260 265 270

Lys Ser Lys Asp Ser Gly Phe Pro Ser Ile Arg Ile Ala Lys Thr Pro
275 280 285

Gln Met Phe Gln Arg Asn Leu Tyr Cys Ser Tyr Ala
290 295 300

<210> 49
<211> 400
<212> PRT
<213> Plasmodium falciparum

<400> 49

Met Lys Asn Glu Asn Met Gly Asn Ser Ile Phe Tyr Tyr Ser Cys Tyr
1 5 10 15

Val Ile Ile Val Leu Thr Ile Ile Leu Ser Lys Phe Val Val Ile Pro
20 25 30

Leu Met Ala Gln Met Phe Leu Tyr Thr Phe Ile Thr Ile Tyr Ile Gly
35 40 45

Ser His Asp Ser Leu Lys Gln Leu Glu Ile Asp Asp Lys Thr Lys Lys
50 55 60

Ser Asp Asn Ile Thr Ala Tyr Asp Ala Met Met Phe Pro Val Ile Gly
65 70 75 80

Ser Ala Ala Leu Leu Thr Leu Tyr Phe Ala Tyr Lys Phe Leu Asp Pro
85 90 95

Phe Tyr Val Asn Leu Leu Leu Thr Leu Tyr Leu Thr Leu Ala Gly Val
100 105 110

Phe Ser Leu Gln Gly Val Phe Thr Thr Ile Leu Glu Pro Val Phe Pro
115 120 125

Asn Phe Phe Lys Lys Asp Glu Tyr Val Lys Thr Phe Lys Leu Pro Asn
130 135 140

```
Phe Ile Tyr Lys Glu Pro Ile Val Phe Asn Thr Asn Lys Gly Glu Ile
145                 150                 155                 160

Val Cys Leu Ile Leu Ser Phe Ala Ile Gly Leu Arg Trp Ile Phe Tyr
                165                 170                 175

Lys Asp Phe Ile Thr His Asn Val Leu Ala Val Ser Phe Cys Phe Gln
            180                 185                 190

Ala Ile Ser Leu Val Ile Leu Ser Asn Phe Leu Ile Gly Phe Leu Leu
        195                 200                 205

Leu Ser Gly Leu Phe Val Tyr Asp Ile Phe Trp Val Phe Gly Asn Asp
    210                 215                 220

Val Met Val Thr Val Ala Lys Ser Phe Glu Ala Pro Val Lys Leu Leu
225                 230                 235                 240

Phe Pro Val Ser Ser Asp Pro Val His Tyr Ser Met Leu Gly Leu Gly
                245                 250                 255

Asp Ile Ile Ile Pro Gly Ile Leu Met Ser Leu Cys Leu Arg Phe Asp
            260                 265                 270

Tyr Tyr Leu Phe Lys Asn Asn Ile His Lys Gly Asn Leu Lys Lys Met
        275                 280                 285

Phe Asn Asp Ile Ser Ile His Glu Ser Phe Lys Lys Tyr Tyr Phe Tyr
    290                 295                 300

Thr Ile Ile Ile Phe Tyr Glu Leu Gly Leu Val Val Thr Tyr Cys Met
305                 310                 315                 320

Leu Phe Tyr Phe Glu His Pro Gln Pro Ala Leu Leu Tyr Leu Val Pro
                325                 330                 335

Ala Cys Ile Leu Ala Ile Leu Ala Cys Ser Ile Cys Lys Arg Glu Phe
            340                 345                 350

Lys Leu Met Ile Lys Tyr Gln Glu Ile Thr Asp Lys Ser Asn Thr Val
        355                 360                 365

Asp Asp Ala Ser Lys Asn Lys Lys Lys Asp Lys Glu Glu Ile Pro Lys
    370                 375                 380

Ile Gln Glu Thr Pro Val Ser Asn Ala Lys Lys Arg Ile Thr Asn Lys
385                 390                 395                 400
```

<210> 50
<211> 1331
<212> PRT
<213> Plasmodium falciparum

<400> 50

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Met Val Leu Val Val Glu Tyr His Asn Ile Asn Thr Pro Val Gly Lys
1               5                   10                  15

Tyr Ser Glu Leu Glu Asn Leu Lys Glu Glu Lys Glu Lys Arg Leu Tyr
```

```
            20                  25                  30

Asn Asn Leu Glu Tyr Val Asn Leu Leu Asp Ile Arg Thr Leu Glu Asn
        35                  40                  45

Lys Ser Ile Tyr Val Ser Ser Asp Leu Leu Asn Phe Leu Lys Cys Tyr
    50                  55                  60

Ser Asn Leu Asn Ile Asn Leu Asn Lys Val Pro Tyr Asp Leu Val Tyr
65                  70                  75                  80

Ser Phe Leu Leu Asp Gly Glu Leu Tyr Leu Gly Tyr Asp Ile Ser Val
                85                  90                  95

Phe Ile Leu Leu Val Lys Ala Glu His Phe Glu Tyr Cys Arg Arg Ile
            100                 105                 110

Asp Asn Glu Asn Ser Asp Lys Lys Glu Ser Phe Arg Thr Lys Asn Lys
        115                 120                 125

Ser Thr Ile Lys Arg Ser Ser Gln Ile Asp Asp Glu Asp Asn Leu Gln
    130                 135                 140

Gly Leu Leu Ile Lys Glu Lys Glu Asp Tyr Leu Ser Phe Leu Asn Glu
145                 150                 155                 160

Asn Asn Glu Ala Leu Lys Gln Tyr Met Glu Ser Glu Lys Arg Gly Asn
                165                 170                 175

Pro Leu Trp His Leu Asp Glu Ser Lys Tyr Met Asp Lys Asp Trp Tyr
            180                 185                 190

Asp Glu Glu Asp Ser Ser Phe Ile Phe Lys Pro Thr Phe Asn Tyr Leu
        195                 200                 205

Gly Lys Asn Asn Asn Asn Asn Asn Asn His Asn Asn Asn Asn Ala Phe
    210                 215                 220

Ser Asn Phe Val Met Gly Asn Leu Ser Ser Asp Asn Ile Ser Gly Cys
225                 230                 235                 240

Phe Phe Val Glu Lys Leu Asn Ala Tyr Leu Phe Ala Met Leu Asp Lys
                245                 250                 255

Cys Ser Asn Lys Thr Val Ile Ser Val Phe Pro Tyr Glu Lys Phe Gly
            260                 265                 270

Arg His Glu Ser Arg Asn Leu Ala Ile Gln Phe Ser Gln Tyr Glu Asp
        275                 280                 285

Tyr Met His Arg Ile Ile Glu Asp Arg Leu Tyr Ala Asn Ile Gln Asn
    290                 295                 300

Asn Leu Pro Ser Val His Asn Met Lys Asn Met Ser Asn Met Asn Asn
305                 310                 315                 320

Ile Asn Asn Asn Asn Lys Asp Ile Ile Ile Asn Arg Ser Gly Ile Ser
                325                 330                 335

Asn Gly Asn Ser Gln Ser Val Pro Cys Phe Glu Asn Ile Leu Asp Tyr
```

```
            340                 345                 350

Asp Lys Leu Lys Phe Val Glu Tyr Ile Asn Ser Phe Ser Asp Val Lys
        355                 360                 365

Lys Ser Ser Ser Phe Asp Ile Ile Gly Ser Ser Lys Asn Ile Tyr Glu
    370                 375                 380

Gln Gly Glu Asn Leu Lys Asn Tyr Cys Ile Tyr His Asn Asn Asn Phe
385                 390                 395                 400

Glu Ser Gly Phe Glu Asn Tyr Ile Leu Glu Asn Lys Gln Pro Leu Glu
                405                 410                 415

Leu Ile Glu Asn His Phe Asp Ile Met Glu Asn Ile Lys Gly Met Tyr
            420                 425                 430

Asp Asn Thr Asn Gln Glu Glu Met Asn Phe Asn Asn Val Ser Gly Leu
        435                 440                 445

Leu Arg Glu Asp Asn Ser Asn Met Asn Glu Ile Tyr Leu Thr Arg Asp
    450                 455                 460

Asn His Asn Asn Asn Tyr His Glu Asn Glu Glu Asn Ile Tyr Ser Ile
465                 470                 475                 480

Asn Ile Lys Tyr Ile Asn Asn His Phe Asn Asn Lys Asp Asp Met Ile
                485                 490                 495

Met Lys Cys Lys Asn Met Lys Gly Ser Ile Ser Met Asp Asn Asn Ser
            500                 505                 510

Ser Asn Ser Asn Ser Asn Asn Thr His Phe Glu Lys Thr Leu Glu Ser
        515                 520                 525

Ile Asn Pro Asp Asp His Asn Ile Phe Asn Ser Glu Met Asp Ser Met
    530                 535                 540

Lys Asn Glu Asn Asn Asp Glu Glu Glu Gln Thr Ala Thr Ser Ile Tyr
545                 550                 555                 560

Asn Ile Leu Gly Lys Ile Gly Lys Asp Thr Tyr Ile Lys Arg Cys Ser
                565                 570                 575

Ser Asn Tyr Asn Tyr Asp Asn Asn Asn Gly Tyr Ser Asn Glu Ser Ser
            580                 585                 590

Asp Asn Tyr Asn Asn Gly Tyr Asn Asp Ser Thr Asp Asn Asn Asn Gly
        595                 600                 605

Tyr Asn Ser Asn Ser Ser Tyr Asn Ser Asn Asn Asn Glu Asp Asp Asn
    610                 615                 620

Asn Asn Asn Asn Asn Asn Asp Glu Asn Cys Asp Asn Asn Asn Asn His
625                 630                 635                 640

Asn Asn Asn Asn Tyr Asn Asn Asn Asn Asn Tyr Gly Asn Asn Asn Asn
                645                 650                 655

Asn Asn Asn Asn Asn Lys Asp Asn Asn Asn Asn Asp Gly Asn Gly Ser
```

660 665 670

Ser Asn Asn Asn Asn Asn Asp Asp Asp Asp Glu Glu Glu Glu Asp Asp
675 680 685

Glu Asp Asp Asn Asn Asn Asn Asn Asp Asp Asp Asn Met Ser Asp Asn
690 695 700

Glu Glu Met Glu Asp Asn Asp Glu Asp Asn Asp Glu Tyr Asn Asn Ser
705 710 715 720

Asn Asp Ser Tyr Lys Tyr Glu Glu Lys Asp Ser Asn His Glu Lys Asp
725 730 735

Leu Lys Lys Asp Ile Ile Glu Gly Asp Met Ile Asn Ser Val Lys Tyr
740 745 750

Asp Lys Asn Ile Gly His His Thr Thr Asn Lys Ser Glu Ile Ser Thr
755 760 765

Asn Tyr Phe Glu Asn Ser Cys Asn Met Ser Val Asn Asn Ser Asn Asn
770 775 780

Glu Ala Tyr Asp Asp Asn Cys Asn Asn Gly Phe Met Asn His Asp Glu
785 790 795 800

Gly Leu Thr Leu Asn Asn Gly Asn Val Ser Asn Asn Lys Cys Asp Ile
805 810 815

Ile Ile Pro Glu Asp Gly Ser Val Met Tyr Glu Asn Met Ile Asn Arg
820 825 830

Gly Asn Gly Leu Thr Ser Asn Ile Asn Asn Asn Asn Asn Val Ser Asn
835 840 845

Asn Asn Ser Ile Ser Cys Asn Ala Asp Asp Asn Val Tyr Asn Asn Ile
850 855 860

Asn Asn Tyr Ile Asn Thr Tyr Met Glu Thr Thr Asn Asn Lys Asn His
865 870 875 880

Ile Glu Asn Arg Cys Asn Gln Asp Ser Tyr Ser Thr Asn Glu Glu Pro
885 890 895

Leu Ser Asn His Ser Ile Asn Asp Pro Gly Lys Ile Lys Asp Gly Ile
900 905 910

Met Tyr Asp Gly Asn Asp Leu Asp Met Asn Gly Thr Gln Glu His Ser
915 920 925

Lys Glu Glu Gly Met Asp Val Phe Glu Pro Asn Phe Phe Glu Leu Lys
930 935 940

Arg Asn Ser Ser Asp Gly Gln Asn Lys His Leu Glu Pro Gly Val Gln
945 950 955 960

Lys Lys Ile Ser Lys Lys Arg Ser Lys Val Lys His Glu Arg Asn Ser
965 970 975

Lys Ile Leu Asp Asp Glu Lys Lys Glu Val Leu Asn Lys Val Ser Gln

```
          980                 985                 990

Ile Thr Arg Val Gly Gly Val Cys  Phe Asp Lys Asn Arg  Gln Arg Trp
       995                1000                1005

Ile Ala  His Trp Lys Ile Asp  Gly Lys Tyr His Lys  His Tyr Phe
    1010                1015                1020

Pro Ile  Ser Gln Tyr Gly Phe  Glu Asn Ala Arg Glu  Arg Ala Val
    1025                1030                1035

Ser Cys  Arg Lys Gln Ala Glu  Lys Leu Phe Asn Leu  Pro Glu Ile
    1040                1045                1050

Gln Pro  Arg Asn Arg Trp Asn  Gln Ile Lys Val Asn  Gly Thr Ser
    1055                1060                1065

His Ile  Lys Lys Ala Ala Lys  Leu Pro Arg Cys Glu  Gly Ile Gly
    1070                1075                1080

Tyr Asp  Glu Leu Ser Gln Ser  Trp Val Ser Thr Phe  Val Val His
    1085                1090                1095

Lys Lys  Phe Ser Ile Glu Glu  Leu Gly Phe Tyr Glu  Ala Arg Glu
    1100                1105                1110

Lys Ala  Ile Tyr Cys Arg Lys  Thr Phe Glu Lys Val  Asn Val His
    1115                1120                1125

Asp Asp  Tyr Glu Cys Leu Leu  Asn Asp Arg Leu Gly  Leu Arg Asn
    1130                1135                1140

Glu Glu  Lys Asp Glu Leu Ser  Asp Leu Ile Asn Ile  Asp Lys Asn
    1145                1150                1155

Ala Leu  Asp Asn Leu Glu Leu  Glu Thr Ser Val His  Asn Asn Asn
    1160                1165                1170

Lys Val  Lys His Asn Asn Asn  Asn Asn Asn Asn Asn  Asn Asn Asn
    1175                1180                1185

Asn Asn  Asn Asn Asn Asn Asn  Asn Ser Glu Lys Met  Arg Ile Lys
    1190                1195                1200

Asn Asn  Asp Phe Ser Val Asp  Asn Asn Asn Glu Asn  Val Gly Thr
    1205                1210                1215

Gly Glu  Ile Lys Ile Ser Asn  Asp Lys Tyr Leu Lys  Ile Thr Gln
    1220                1225                1230

Glu Ala  Ile Glu Met Ile Leu  Ser Asn Ile Lys His  Lys Ser Leu
    1235                1240                1245

Pro Glu  Ile Lys Met Lys Leu  Ile Asp Lys Gln Lys  Phe Glu Asn
    1250                1255                1260

Tyr Asn  Thr Leu Leu Asp Lys  His Phe Lys Phe Ile  Thr Ser Val
    1265                1270                1275

Lys Asn  Ile Ser Gln Leu Arg  Arg Tyr Ile Ser Leu  Phe His Lys
```

1280 1285 1290

Phe Ile Ile Tyr His Thr Leu Pro His Asn Ile Ser Leu Arg Lys
1295 1300 1305

Gln Leu Phe Ile Ile Glu Ala Leu Glu Trp Ser Ser Phe Phe Ser
1310 1315 1320

Gly Ala Ala Ser Glu Lys Val Glu
1325 1330

<210> 51
<211> 291
<212> PRT
<213> Plasmodium falciparum

<400> 51

Met Glu Val Thr Ser Thr Leu Leu Glu Lys Gly Lys Asn Phe Ala Gln
1 5 10 15

Asp Pro Ser Glu Val Phe Pro Glu Ser Lys Lys Phe Phe Phe Ser Ser
20 25 30

Ile Val Cys Leu Lys Thr Asn Phe Asp Lys Arg Thr Gly Ala Leu Gly
35 40 45

Tyr Leu Asn Leu Ser Tyr Gly Met Gly Ile Ile Phe Gly Ser Phe Leu
50 55 60

Ala Gly Val Met Val Asn Phe Val Gly Ser Arg Gly Asn Leu Leu Ile
65 70 75 80

Ala Leu Leu Ser Gln Leu Ile Ala Leu Cys Ile Ser Thr Thr Leu Glu
85 90 95

Glu Asp Pro Lys Leu Leu Lys Ser Ser Asn Val Asp Lys Met Lys Met
100 105 110

Ser Glu Ile Leu Leu Ser Ile Lys Asn Glu Tyr Ile Arg Val Leu Asn
115 120 125

Leu Phe Lys Lys Thr Tyr Gly Ile Cys Leu Leu Ile Leu Phe Gly Leu
130 135 140

Leu Pro Ile Leu Met Thr Lys Phe Ala Phe Ala Pro Val Val Val Asp
145 150 155 160

Met Phe Lys Leu Thr Pro Ser His Thr Ser Tyr Leu Met Thr Tyr Ala
165 170 175

Gly Ile Ile Thr Ile Ile Ala Glu Gly Ile Leu Ala Pro Tyr Leu Ser
180 185 190

Ser Leu Leu Gly Asp Met Ile Cys Cys Lys Tyr Ser Ile Pro Leu Thr
195 200 205

Leu Thr Gly Phe Leu Leu Leu Ser Leu Cys Gly Ala Asn Glu Ser Leu
210 215 220

Val Leu Ile Phe Met Ser Ile Pro Leu Cys Gly Gly Ala Leu Leu Tyr
225 230 235 240

Ile Cys Gly Thr Ser Gln Met Thr Lys Arg Val Glu Glu Ser Glu Leu
245 250 255

Gly Ser Ile Ile Gly Leu Asn Thr Ser Leu Phe Tyr Ala Val Thr Ile
260 265 270

Ile Ala Pro Tyr Ile Ala Phe Lys Ser Tyr Ile Ala Leu Gly Leu Gly
275 280 285

Leu Tyr Trp
290

<210> 52
<211> 903
<212> PRT
<213> Plasmodium falciparum

<400> 52

Met Arg Ile Trp Gly Lys Asp Val Phe Ala Gly Phe Val Thr Lys Lys
1 5 10 15

Leu Lys Thr Leu Leu Asp Cys Asn Phe Ala Leu Tyr Tyr Asn Phe Lys
20 25 30

Gly Asn Gly Pro Asp Ala Gly Ser Phe Leu Asp Phe Val Asp Glu Pro
35 40 45

Glu Gln Phe Tyr Trp Phe Val Glu His Phe Leu Ser Val Lys Phe Arg
50 55 60

Val Pro Lys His Leu Lys Asp Lys Asn Ile His Asn Phe Thr Pro Cys
65 70 75 80

Leu Asn Arg Ser Trp Val Ser Glu Phe Leu Lys Glu Tyr Glu Glu Pro
85 90 95

Phe Val Asn Pro Val Met Lys Phe Leu Asp Lys Glu Gln Arg Leu Phe
100 105 110

Phe Thr Tyr Asn Phe Gly Asp Val Glu Pro Gln Gly Lys Tyr Thr Tyr
115 120 125

Phe Pro Val Lys Glu Phe His Lys Tyr Cys Ile Leu Pro Pro Leu Ile
130 135 140

Lys Thr Asn Ile Lys Asp Gly Glu Ser Gly Glu Phe Leu Lys Tyr Gln
145 150 155 160

Leu Asn Lys Glu Glu Tyr Lys Val Phe Leu Ser Ser Val Gly Ser Gln
165 170 175

Met Thr Ala Ile Lys Asn Leu Tyr Ser Thr Val Glu Asp Glu Gln Arg
180 185 190

Lys Gln Leu Leu Lys Val Ile Ile Glu Asn Glu Ser Thr Asn Asp Ile
195 200 205

Ser Val Gln Cys Pro Thr Tyr Asn Ile Lys Leu His Tyr Thr Lys Glu
210 215 220

Cys Ala Asn Ser Asn Asn Ile Leu Lys Cys Ile Asp Glu Phe Leu Arg
225 230 235 240

Lys Thr Cys Glu Lys Lys Thr Glu Ser Lys His Pro Ser Ala Asp Leu
245 250 255

Cys Glu His Leu Gln Phe Leu Phe Glu Ser Leu Lys Asn Pro Tyr Leu
260 265 270

Asp Asn Phe Lys Lys Phe Met Thr Asn Ser Asp Phe Thr Leu Ile Lys
275 280 285

Pro Gln Ser Val Trp Asn Val Pro Ile Phe Asp Ile Tyr Lys Pro Lys
290 295 300

Asn Tyr Leu Asp Ser Val Gln Asn Leu Asp Thr Glu Cys Phe Lys Lys
305 310 315 320

Leu Asn Ser Lys Asn Leu Ile Phe Leu Ser Phe His Asp Asp Ile Pro
325 330 335

Asn Asn Pro Tyr Tyr Asn Val Glu Leu Gln Glu Ile Val Lys Leu Ser
340 345 350

Thr Tyr Thr Tyr Ser Ile Phe Asp Lys Leu Tyr Asn Phe Phe Phe Val
355 360 365

Phe Lys Lys Ser Gly Ala Pro Ile Ser Pro Val Ser Val Lys Glu Leu
370 375 380

Ser His Asn Ile Thr Asp Phe Ser Phe Lys Glu Asp Asn Ser Glu Ile
385 390 395 400

Gln Cys Gln Asn Val Arg Lys Ser Leu Asp Leu Glu Val Asp Val Glu
405 410 415

Thr Met Lys Gly Ile Ala Ala Glu Lys Leu Cys Lys Ile Ile Glu Lys
420 425 430

Phe Ile Leu Thr Lys Asp Asp Ala Ser Lys Pro Glu Lys Ser Asp Ile
435 440 445

His Arg Gly Phe Arg Ile Leu Cys Ile Leu Ile Ser Thr His Val Glu
450 455 460

Ala Tyr Asn Ile Val Arg Gln Leu Leu Asn Met Glu Ser Met Ile Ser
465 470 475 480

Leu Thr Arg Tyr Thr Ser Leu Tyr Ile His Lys Phe Phe Lys Ser Val
485 490 495

Thr Leu Leu Lys Gly Asn Phe Leu Tyr Lys Asn Asn Lys Ala Ile Arg
500 505 510

Tyr Ser Arg Ala Cys Ser Lys Ala Ser Leu His Val Pro Ser Val Leu
515 520 525

Tyr Arg Arg Asn Ile Tyr Ile Pro Glu Thr Phe Leu Ser Leu Tyr Leu
    530   535   540

Gly Leu Ser Asn Leu Val Ser Ser Asn Pro Ser Ser Pro Phe Phe Glu
545   550   555   560

Tyr Ala Ile Ile Glu Phe Leu Val Thr Tyr Tyr Asn Lys Gly Ser Glu
                565   570   575

Lys Phe Val Leu Tyr Phe Ile Ser Ile Ile Ser Val Leu Tyr Ile Asn
            580   585   590

Glu Tyr Tyr Tyr Glu Gln Leu Ser Cys Phe Tyr Pro Lys Glu Phe Glu
        595   600   605

Leu Ile Lys Ser Arg Met Ile His Pro Asn Ile Val Asp Arg Ile Leu
    610   615   620

Lys Gly Ile Asp Asn Leu Met Lys Ser Thr Arg Tyr Asp Lys Met Arg
625   630   635   640

Thr Met Tyr Leu Asp Phe Glu Ser Ser Asp Ile Phe Ser Arg Glu Lys
                645   650   655

Val Phe Thr Ala Leu Tyr Asn Phe Asp Ser Phe Ile Lys Thr Asn Glu
            660   665   670

Gln Leu Lys Lys Lys Asn Leu Glu Glu Ile Ser Glu Ile Pro Val Gln
        675   680   685

Leu Glu Thr Ser Asn Asp Gly Ile Gly Tyr Arg Lys Gln Asp Val Leu
    690   695   700

Tyr Glu Thr Asp Lys Pro Gln Thr Met Asp Glu Ala Ser Tyr Glu Glu
705   710   715   720

Thr Val Asp Glu Asp Ala His His Val Asn Glu Lys Gln His Ser Ala
                725   730   735

His Phe Leu Asp Ala Ile Ala Glu Lys Asp Ile Leu Glu Glu Lys Thr
            740   745   750

Lys Asp Gln Asp Leu Glu Ile Glu Leu Tyr Lys Tyr Met Gly Pro Leu
        755   760   765

Lys Glu Gln Ser Lys Ser Thr Ser Ala Ala Ser Thr Ser Asp Glu Ile
    770   775   780

Ser Gly Ser Glu Gly Pro Ser Thr Glu Ser Thr Ser Thr Gly Asn Gln
785   790   795   800

Gly Glu Asp Lys Thr Thr Asp Asn Thr Tyr Lys Glu Met Glu Glu Leu
                805   810   815

Glu Glu Ala Glu Gly Thr Ser Asn Leu Lys Lys Gly Leu Glu Phe Tyr
            820   825   830

Lys Ser Ser Leu Lys Leu Asp Gln Leu Asp Lys Glu Lys Pro Lys Lys
        835   840   845

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Lys Lys Ser Lys Arg Lys Lys Lys Arg Asp Ser Ser Ser Asp Arg Ile
    850                 855                 860

Leu Leu Glu Glu Ser Lys Thr Phe Thr Ser Glu Asn Glu Leu Met Arg
865                 870                 875                 880

Lys Lys Lys Lys Lys Lys Lys Lys Lys Asn Asn Asn Glu Ile Lys Asn
                885                 890                 895

Ile Arg Ile Tyr Tyr Asn Leu
            900
```

<210> 53
<211> 743
<212> PRT
<213> Plasmodium falciparum

<400> 53

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Met Met Asn Met Lys Ile Val Leu Phe Ser Leu Leu Leu Phe Val Ile
1               5                   10                  15

Arg Trp Asn Ile Ile Ser Cys Asn Lys Asn Asp Lys Asn Gln Gly Val
            20                  25                  30

Asp Met Asn Val Leu Asn Asn Tyr Glu Asn Leu Phe Lys Phe Val Lys
        35                  40                  45

Cys Glu Tyr Cys Asn Glu His Thr Tyr Val Lys Gly Lys Lys Ala Pro
    50                  55                  60

Ser Asp Pro Gln Cys Ala Asp Ile Lys Glu Glu Cys Lys Glu Leu Leu
65                  70                  75                  80

Lys Glu Lys Gln Tyr Thr Asp Ser Val Thr Tyr Leu Met Asp Gly Phe
                85                  90                  95

Lys Ser Ala Asn Asn Ser Ala Asn Asn Gly Lys Lys Asn Asn Ala Glu
            100                 105                 110

Glu Met Lys Asn Leu Val Asn Phe Leu Gln Ser His Lys Lys Leu Ile
        115                 120                 125

Lys Ala Leu Lys Lys Asn Ile Glu Ser Ile Gln Asn Lys Lys His Leu
    130                 135                 140

Ile Tyr Lys Asn Lys Ser Tyr Asn Pro Leu Leu Leu Ser Cys Val Lys
145                 150                 155                 160

Lys Met Asn Met Leu Lys Glu Asn Val Asp Tyr Ile Gln Lys Asn Gln
                165                 170                 175

Asn Leu Phe Lys Glu Leu Met Asn Gln Lys Ala Thr Tyr Ser Phe Val
            180                 185                 190

Asn Thr Lys Lys Lys Ile Ile Ser Leu Lys Ser Gln Gly His Lys Lys
        195                 200                 205

Glu Thr Ser Gln Asn Gln Asn Glu Asn Asn Asp Asn Gln Lys Tyr Gln
```

```
    210                 215                 220

Glu Val Asn Asp Glu Asp Asp Val Asn Asp Glu Glu Asp Thr Asn Asp
225                 230                 235                 240

Asp Glu Asp Thr Asn Asp Glu Glu Asp Thr Asn Asp Asp Glu Asp Thr
                245                 250                 255

Asn Asp Asp Glu Asp Thr Asn Asp Glu Glu Asp Thr Asn Asp Glu Glu
            260                 265                 270

Asp His Glu Asn Asn Asn Ala Thr Ala Tyr Glu Leu Gly Ile Val Pro
        275                 280                 285

Val Asn Asp Val Leu Asn Val Asn Met Lys Asn Met Ile Thr Gly Asn
    290                 295                 300

Asn Phe Met Asp Val Val Lys Asn Thr Leu Ala Gln Ser Gly Gly Leu
305                 310                 315                 320

Gly Ser Asn Asp Leu Ile Asn Phe Leu Asn Gln Gly Lys Glu Ile Gly
                325                 330                 335

Glu Asn Leu Leu Asn Ile Thr Lys Met Asn Leu Gly Asp Lys Asn Asn
            340                 345                 350

Leu Glu Ser Phe Pro Leu Asp Glu Leu Asn Met Leu Lys Asp Asn Leu
        355                 360                 365

Ile Asn Tyr Glu Phe Ile Leu Asp Asn Leu Lys Thr Ser Val Leu Asn
    370                 375                 380

Lys Leu Lys Asp Leu Leu Leu Arg Leu Leu Tyr Lys Ala Tyr Val Ser
385                 390                 395                 400

Tyr Lys Lys Arg Lys Ala Gln Glu Lys Gly Leu Pro Glu Pro Thr Val
                405                 410                 415

Thr Asn Glu Glu Tyr Val Glu Glu Leu Lys Lys Gly Ile Leu Asp Met
            420                 425                 430

Gly Ile Lys Leu Leu Phe Ser Lys Val Lys Ser Leu Leu Lys Lys Leu
        435                 440                 445

Lys Asn Lys Ile Phe Pro Lys Lys Lys Glu Asp Asn Gln Ala Val Asp
    450                 455                 460

Thr Lys Ser Met Glu Glu Pro Lys Val Lys Ala Gln Pro Ala Leu Arg
465                 470                 475                 480

Gly Val Glu Pro Thr Glu Asp Ser Asn Ile Met Asn Ser Ile Asn Asn
                485                 490                 495

Val Met Asp Glu Ile Asp Phe Phe Glu Lys Glu Leu Ile Glu Asn Asn
            500                 505                 510

Asn Thr Pro Asn Val Val Pro Pro Thr Gln Ser Lys Lys Lys Asn Lys
        515                 520                 525

Asn Glu Thr Val Ser Gly Met Asp Glu Asn Phe Asp Asn His Pro Glu
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    530                 535                 540

Asn Tyr Phe Lys Glu Glu Tyr Tyr Tyr Asp Glu Asn Asp Asp Met Glu
545                 550                 555                 560

Val Lys Val Lys Lys Ile Gly Val Thr Leu Lys Lys Phe Glu Pro Leu
                565                 570                 575

Lys Asn Gly Asn Val Ser Glu Thr Ile Lys Leu Ile His Leu Gly Asn
            580                 585                 590

Lys Asp Lys Lys His Ile Glu Ala Ile Asn Asn Asp Ile Gln Ile Ile
        595                 600                 605

Lys Gln Glu Leu Gln Ala Ile Tyr Asn Glu Leu Met Asn Tyr Thr Asn
    610                 615                 620

Gly Asn Lys Asn Ile Gln Gln Ile Phe Gln Gln Asn Ile Leu Glu Asn
625                 630                 635                 640

Asp Val Leu Asn Gln Glu Thr Glu Glu Glu Met Glu Lys Gln Val Glu
                645                 650                 655

Ala Ile Thr Lys Gln Ile Glu Ala Glu Val Asp Ala Leu Ala Pro Lys
            660                 665                 670

Asn Lys Glu Glu Glu Glu Lys Glu Lys Glu Lys Glu Glu Lys Glu Lys
        675                 680                 685

Glu Glu Lys Glu Lys Glu Lys Glu Glu Lys Glu Lys Glu Glu Lys Glu
    690                 695                 700

Lys Glu Glu Lys Glu Lys Glu Glu Lys Glu Glu Glu Lys Lys Glu Lys
705                 710                 715                 720

Glu Glu Glu Gln Glu Glu Glu Glu Glu Glu Glu Ile Val Pro Glu Asn
                725                 730                 735

Leu Thr Thr Glu Glu Ser Lys
            740
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<210> 54
<211> 1137
<212> DNA
<213> Plasmodium falciparum

<400> 54

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ggagaagcag taactccttc cgtaattgat aacatacttt ctaaaattga aaatgaatat     60

gaggttttat atttaaaacc tttagcaggt gtttatagaa gtttaaaaaa acaattagaa    120

aataacgtta tgacatttaa tgttaatgtt aaggatattt taaattcacg atttaataaa    180

cgtgaaaatt tcaaaaatgt tttagaatca gatttaattc catataaaga tttaacatca    240

agtaattatg ttgtcaaaga tccatataaa tttcttaata aagaaaaaag agataaattc    300

ttaagcagtt ataattatat taaggattca atagatacgg atataaattt tgcaaatgat    360

gttcttggat attataaaat attatccgaa aaatataaat cagatttaga ttcaattaaa    420
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aaatatatca acgacaaaca aggtgaaaat gagaaatacc ttccctttt aaacaatatt 480

gagaccttat ataaaacagt taatgataaa attgatttat ttgtaattca tttagaagca 540

aaagttctaa attatacata tgagaaatca aacgtagaag ttaaaataaa agaacttaat 600

tacttaaaaa caattcaaga caaattggca gattttaaaa aaaataacaa tttcgttgga 660

attgctgatt tatcaacaga ttataaccat aataacttat tgacaaagtt ccttagtaca 720

ggtatggttt ttgaaaatct tgctaaaacc gttttatcta atttacttga tggaaacttg 780

caaggtatgt taaacatttc acaacaccaa tgcgtaaaaa aacaatgtcc acaaaattct 840

ggatgtttca gacatttaga tgaaagagaa gaatgtaaat gtttattaaa ttacaaacaa 900

gaaggtgata aatgtgttga aaatccaaat cctacttgta acgaaaataa tggtggatgt 960

gatgcagatg ccaaatgtac cgaagaagat tcaggtagca acggaaagaa aatcacatgt 1020

gaatgtacta aacctgattc ttatccactt ttcgatggta ttttctgcag ttcctctaac 1080

ttcttaggaa tatcattctt attaatactc atgttaatat tatacagttt catttaa 1137

<210> 55
<211> 1080
<212> DNA
<213> Plasmodium falciparum

<400> 55
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agtttaaaat tatttgaaaa catattgagt cttggaaaaa acaaaaatat ataccaagaa 120

ttaataggtc aaaaaagtag tgaaaacttt tatgaaaaga tattaaaaga tagtgataca 180

ttttataatg aatcttttac aaattttgta aaatctaaag ctgatgatat taattcattg 240

aatgatgaat caaaaaggaa gaaattagaa gaagatatta ataaattaaa aaaaacttta 300

cagttatcat ttgatttata taataaatat aaattaaaat tagaaagatt atttgataaa 360

aagaaaacag ttggtaaata taaaatgcaa attaaaaaac ttactttatt aaaagaacaa 420

ttagaatcaa aattgaattc acttaataac ccaaagcatg tattacaaaa cttttctgtt 480

ttctttaaca aaaaaaaaga agctgaaata gcagaaactg aaaacacatt agaaaacaca 540

aaaatattat tgaaacatta taaaggactt gttaaatatt ataatggtga atcatctcca 600

ttaaaaactt taagtgaaga atcaattcaa acagaagata attatgccag tttagaaaac 660

tttaaagtat taagtaaatt agaaggaaaa ttaaaggata atttaaattt agaaaagaaa 720

aaattatcat acttatcaag tggattacat catttaattg ctgaattaaa agaagtaata 780

aaaaataaaa attatacagg taattctcca agtgaaaata atacggatgt taacaatgca 840

ttagaatctt acaaaaaatt tctcccagaa ggaacagatg ttgcaacagt tgtaagtgaa 900

agtggatccg acacattaga acaaagtcaa ccaaagaaac cagcatcaac tcatgtagga 960

gcagagtcta acacaataac aacatcacaa aatgtcgatg atgaagtaga tgacgtaatc 1020

atagtaccta tatttggaga atccgaagaa gattatgatg atttaggaca agtagtaaca 1080

<210> 56
<211> 660
<212> DNA
<213> Plasmodium falciparum

<400> 56
caggataaac ccgaagtaag tgcaaatgat gatacatcac attctacaaa tttgaataat 60

agtttaaaat tatttgaaaa catattgagt cttggaaaaa acaaaaatat ataccaagaa 120

ttaataggtc aaaaaagtag tgaaaacttt tatgaaaaga tattaaaaga tagtgataca 180

ttttataatg aatcttttac aaattttgta aaatctaaag ctgatgatat taattcattg 240

aatgatgaat caaaaaggaa gaaattagaa gaagatatta ataaattaaa aaaaacttta 300

cagttatcat ttgatttata taataaatat aaattaaaat tagaaagatt atttgataaa 360

aagaaaacag ttggtaaata taaaatgcaa attaaaaaac ttactttatt aaaagaacaa 420

ttagaatcaa aattgaattc acttaataac ccaaagcatg tattacaaaa cttttctgtt 480

ttctttaaca aaaaaaaaga agctgaaata gcagaaactg aaaacacatt agaaaacaca 540

aaaatattat tgaaacatta taaaggactt gttaaatatt ataatggtga atcatctcca 600

ttaaaaactt taagtgaaga atcaattcaa acagaagata attatgccag tttagaaaac 660

<210> 57
<211> 1080
<212> DNA
<213> Plasmodium falciparum

<400> 57
caggataaac ccgaagtaag tgcaaatgat gatacatcac attctacaaa tttgaataat 60

agtttaaaat tatttgaaaa catattgagt cttggaaaaa acaaaaatat ataccaagaa 120

ttaataggtc aaaaaagtag tgaaaacttt tatgaaaaga tattaaaaga tagtgataca 180

ttttataatg aatcttttac aaattttgta aaatctaaag ctgatgatat taattcattg 240

aatgatgaat caaaaaggaa gaaattagaa gaagatatta ataaattaaa aaaaacttta 300

cagttatcat ttgatttata taataaatat aaattaaaat tagaaagatt atttgataaa 360

aagaaaacag ttggtaaata taaaatgcaa attaaaaaac ttactttatt aaaagaacaa 420

ttagaatcaa aattgaattc acttaataac ccaaagcatg tattacaaaa cttttctgtt 480

ttctttaaca aaaaaaaaga agctgaaata gcagaaactg aaaacacatt agaaaacaca 540

aaaatattat tgaaacatta taaaggactt gttaaatatt ataatggtga atcatctcca 600

ttaaaaactt taagtgaaga atcaattcaa acagaagata attatgccag tttagaaaac 660

tttaaagtat taagtaaatt agaaggaaaa ttaaaggata atttaaattt agaaaagaaa 720

aaattatcat acttatcaag tggattacat catttaattg ctgaattaaa agaagtaata 780

aaaaataaaa attatacagg taattctcca agtgaaaata atacggatgt taacaatgca 840

ttagaatctt acaaaaaatt tctcccagaa ggaacagatg ttgcaacagt tgtaagtgaa 900

agtggatccg acacattaga acaaagtcaa ccaaagaaac cagcatcaac tcatgtagga 960

gcagagtcta acacaataac aacatcacaa aatgtcgatg atgaagtaga tgacgtaatc 1020

atagtaccta tatttggaga atccgaagaa gattatgatg atttaggaca agtactaaca 1080

<210> 58
<211> 1131
<212> DNA
<213> Plasmodium falciparum

<400> 58
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ttatatttaa aacctttagc aggtgtttat agaagtttaa aaaaacaatt agaaaataac 120

gttatgacat ttaatgttaa tgttaaggat attttaaatt cacgatttaa taaacgtgaa 180

aatttcaaaa atgttttaga atcagattta attccatata aagatttaac atcaagtaat 240

tatgttgtca aagatccata taaatttctt aataaagaaa aaagagataa attcttaagc 300

agttataatt atattaagga ttcaatagat acggatataa attttgcaaa tgatgttctt 360

ggatattata aaatattatc cgaaaaatat aaatcagatt tagattcaat taaaaaatat 420

atcaacgaca aacaaggtga aaatgagaaa taccttccct ttttaaacaa tattgagacc 480

ttatataaaa cagttaatga taaaattgat ttatttgtaa ttcatttaga agcaaaagtt 540

ctaaattata catatgagaa atcaaacgta gaagttaaaa taaaagaact taattactta 600

aaaacaattc aagacaaatt ggcagatttt aaaaaaaata acaatttcgt tggaattgct 660

gatttatcaa cagattataa ccataataac ttattgacaa agttccttag tacaggtatg 720

gtttttgaaa atcttgctaa aaccgtttta tctaatttac ttgatggaaa cttgcaaggt 780

atgttaaaca tttcacaaca ccaatgcgta aaaaaacaat gtccacaaaa ttctggatgt 840

ttcagacatt tagatgaaag agaagaatgt aaatgtttat taaattacaa acaagaaggt 900

gataaatgtg ttgaaaatcc aaatcctact tgtaacgaaa ataatggtgg atgtgatgca 960

gatgccaaat gtaccgaaga agattcaggt agcaacggaa agaaaatcac atgtgaatgt 1020

actaaacctg attcttatcc acttttcgat ggtattttct gcagttcctc taacttctta 1080

ggaatatcat tcttattaat actcatgtta atattataca gtttcattta a 1131

<210> 59
<211> 343
<212> DNA
<213> Plasmodium falciparum

<400> 59
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tttagatgaa agagaagaat gtaaatgttt attaaattac aaacaagaag gtgataaatg 120

tgttgaaaat ccaaatccta cttgtaacga aaataatggt ggatgtgatg cagatgccaa 180

atgtaccgaa gaagattcag gtagcaacgg aaagaaaatc acatgtgaat gtactaaacc 240

tgattcttat ccacttttcg atggtatttt ctgcagttcc tctaacttct taggaatatc 300

attcttatta atactcatgt taatattata cagtttcatt taa 343

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